Industrial scale ice machines
Evaporator Service Manual
EVE Split – Ed. 07/2006

Scotsman
Ice Systems - Industrial line

Evaporator Manual / EVE Split

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I. INTRODUCTION

Linea.Net Milano Srl manufacture flake ice machines in various production capacities and configurations to suit the numerous market demands.

The agro-food industry (bread making, meat processing, cheese, etc.) and in particular the fishing industry, have found flake ice to offer many advantages over traditional ice cubes or crushed ice.

In the chemical and cement industry flake ice is used during production to avoid premature drying out or temperature control.

The following is an example of sectors that use ice:

- On board installations – Fishing
- Fishing industry - Processing
- Manufacture of fish products
- Fish markets
- Distribution of fresh fish

- Retailers of fish or fish products
- Supermarkets
- Delicatessens

- Meat markets
- Manufacture of poultry and game products
- Production of salamis and sausages
- Oven products and industrial bread-making
- Production of dairy products and cheeses

- Textile industry and paint production
- Chemical-pharmaceutical companies
- Building and construction companies (in compliance with European Standard EN206-1 : 2000)

Our vast experience (since 1973) allows us to offer machines with a high level of reliability, vouched for by numerous clients who are satisfied with the machines they have used.
These machines have been designed to work under stress and offer the following advantages:

- Reliability- Long-life – Reduced running and maintenance costs

Other than the advantage of reduced production costs when using ice, a "**dry and sub-cooled ice"** will last longer and therefore provide a longer thermal inertia. Being flat and free from sharp corners (unlike crushed ice) it will not damage the outside of the product with which it comes into contact which, on defrosting, will lead to a deterioration of the merchandise.

Example of model designation

EVE201	=	Fresh water version – Land Based
EVE201 FW	=	Fresh water version – On Board
EVE201 LSW	=	Sea water version - Land Based
EVE201 SW	=	Sea water version – On Board

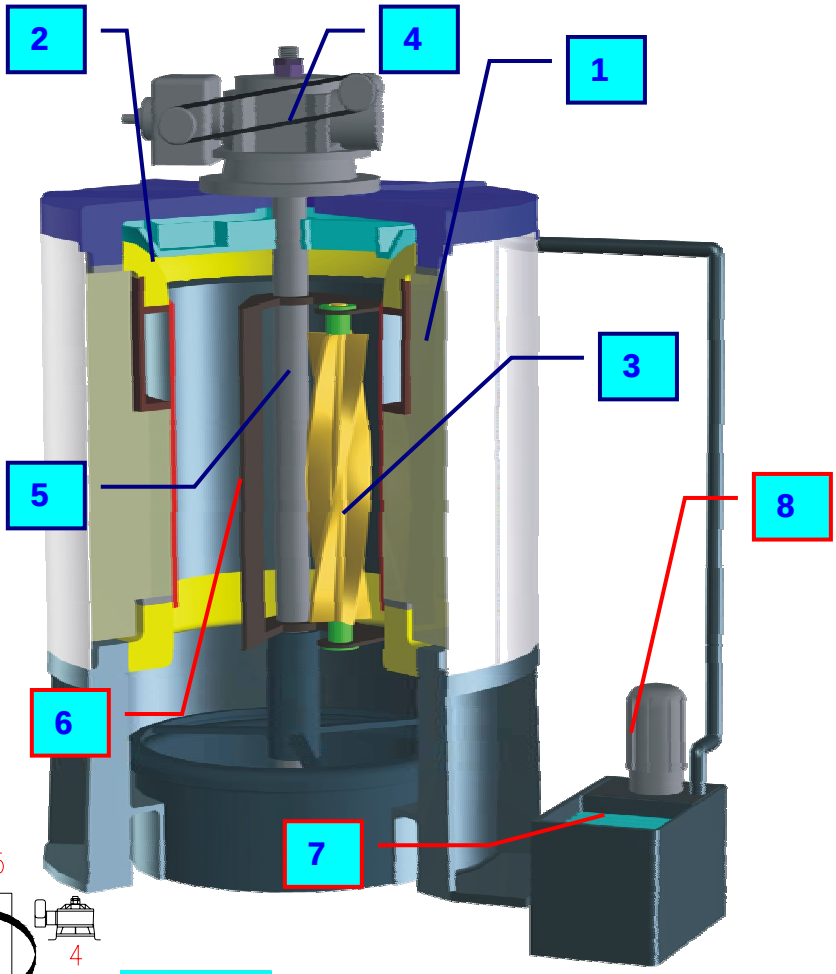
II. A working outline

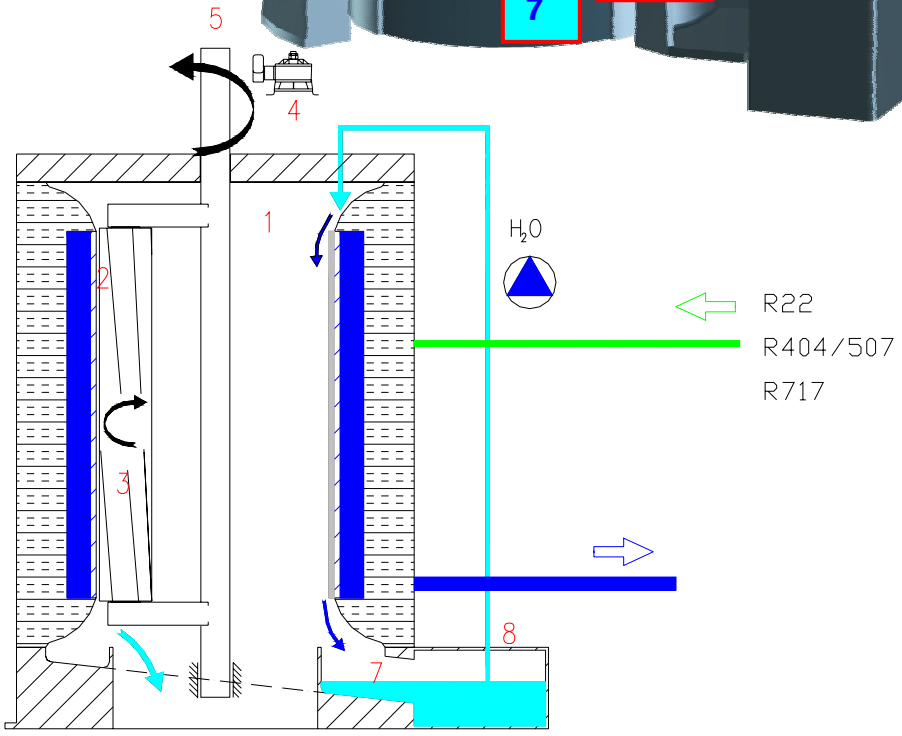
A fixed vertical evaporator (1) is cooled by the refrigerant fluid evaporating on the inside. Water is evenly distributed from above onto the internal surface (2), where it freezes once it comes into contact with the cold wall. A helicoidal ice-breaker (3) is positioned parallel to the cylinder axis, almost in contact with the internal surface and the gear reducer (4) causes the central shaft (5) to turn at a constant speed. The ice-breaker is connected to the central shaft with a satellite mechanism.

The ice-breaker rotates on the surface of ice; it removes it by breaking it into flakes which then fall by gravity. A flat, vertical blade (6) follows the ice-breaker cleaning the surface of possible residue.

Un-frozen water is returned to the reservoir (7).

Water pump (8) circulates water around the system.





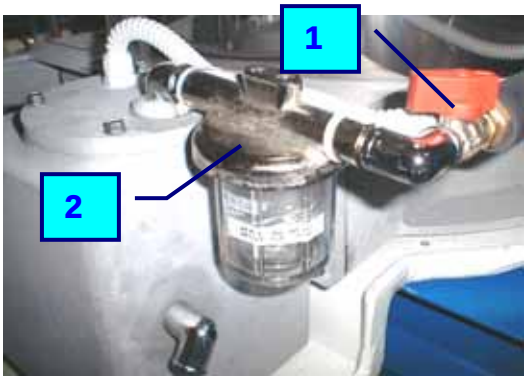
a. WATER SYSTEM

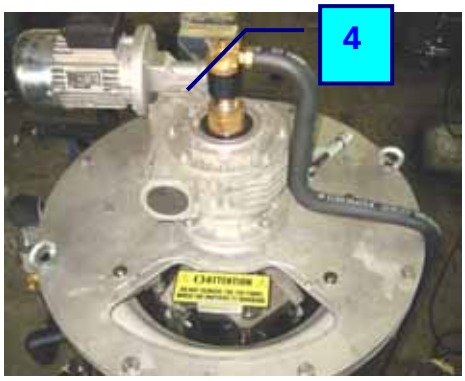
At the base of the machine is the water reservoir in which the stainless steel pump is immersed. Water is pumped to the distributor from which it falls by gravity; there is a filter (2) and shut-off valve (1) on the toroidal distributor which is positioned internally and integral with the central shaft.

Depending upon the application, there are two different types of distributor:

a) Peralluman pipe with regular perforations and supply from above (land version)

b) Stainless steel ring pipe with regular perforations and supply from the axis of the gear reducer (on board version)



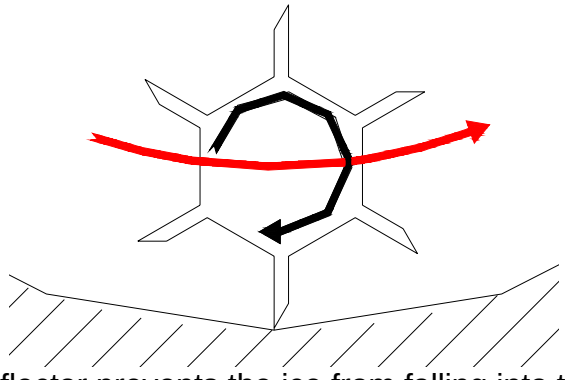


In the LAND version, a level sensor (3) allows a check to be carried out on the water flow. The upper part of the cylinder is rounded at the end in order to channel the water towards the walls of the cylinder.

In the reservoir there is a float valve which regulates the flow of water from the external feed circuit in such a way that the level remains constant. The ice has to be dry and sub-cooled, for this the surface of the evaporator cylinder which is immediately in front of the scraper roller is not irrigated by the water distribution apparatus.

b. ICE OUTLET

The stainless steel shaft, positioned in the centre of the cylinder, is turned on its vertical axis by a gear reducer. Connected onto the shaft are two 'V' arms onto which the ice-breaker is fixed on one side and the scraping roller on the other. This collects and cleans the surface of ice. The ice-breaker, turning on its own axis and rotating over the ice formed on the inside, detaches it by breaking it **(see photo).**



A deflector prevents the ice from falling into the water reservoir.

Depending on the type of application and position of the machine, there must be adequate conveyors, containers or storage bins to collect the ice.
The rotation speed determines the thickness of the ice: a slower speed corresponds to an increased thickness and sub-cooling of the ice.
It is possible to alter the speed by applying a frequency converter (inverter) onto the electrical supply of the gear reducer.

c. REFRIGERATION SYSTEM

The evaporator cylinder is the main element in the machine. In its internal chambers the cold refrigerant circulates and absorbs heat. The walls facing the outside are insulated with foamed polyurethane. At the base of the cylinder there is a system for the removal of oil should the machine need to be closed down for long periods or for use during maintenance visits.

i. DIRECT EXPANSION WITH THERMOSTATIC VALVE
The refrigerant liquid is circulated through a coil on the inside of the cylinder (acting as heat exchanger), then with the use of a thermostatic valve is injected into the evaporator where it absorbs heat and evaporates. The vapour is recovered using the suction pipe as indicated in the technical diagrams.

ii. DIRECT EXPANSION through FLOODING with LEVEL CONTROL
The refrigerant liquid flows through the pipe for sub-cooling with the use of a solenoid valve and a regulating valve (for the fall in pressure). It then floods the evaporator's internal chambers, where the expansion phase takes place. If the machine is not completely flooded, the level control is carried out with an electronic controller (FTL) which controls the solenoid valve. The variation in pressure between the liquid and suction must have an **ΔP no lower than 12 bar** to guarantee an adequate supply of refrigerant.

iii. FLOODING WITH PUMP REFRIGERATION SYSTEM
The refrigerant liquid which comes from the cold receiver, completely floods the evaporator. The evaporator is divided into sections with valves on the inlet.

d. Working limits of the Evaporator Cylinder

The evaporator cylinders were designed to comply with VSR-95, C.T.I. Recomendations, ISPESL S & M standards to contain refrigerant fluid up to the maximum accepted PS pressure conditions, PT test pressure (junction coeffient Z=0.85, void corrosion stock (expected life: 15 years). Throughout calculations, impact, heavy loads, earthquakes and wind were taken into consideration.

Diagram	Rev	PS	PT	TS_{min}	TS_{max} (1)	V(lt)	refrigerant	Cat.	Mod. (2)
CE18A	0	17.65	25.24	-35	+40	23	EN378-1:00 Gr.L1 (3)	II.	A1
CE25A	0	17.65	25.24	-35	+40	27	EN378-1:00 Gr.L1 (3)	II.	A1
CE40A	0	17.65	25.24	-35	+40	32	EN378-1:00 Gr.L1 (3)	II.	A1
CE65A	0	17.65	25.24	-35	+40	69	EN378-1:00 Gr.L1 (3)	III	B+C1
CE85A	0	17.65	25.24	-35	+40	78	EN378-1:00 Gr.L1 (3)	III	B+C1
CE100B	0	17.65	25.24	-35	+40	282	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE125B	0	17.65	25.24	-35	+40	370	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE160B	0	17.65	25.24	-35	+40	432	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE240B	0	17.65	25.24	-35	+40	602	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE100A	0	17.65	25.24	-35	+40	280	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE125A	0	17.65	25.24	-35	+40	370	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE160A	0	17.65	25.24	-35	+40	430	EN378-1:00 Gr.L1 (3); R717	IV	B+F
CE240A	0	17.65	25.24	-35	+40	600	EN378-1:00 Gr.L1 (3); R717	IV	B+F

(1) for the refrigerants with T_{PS}<TS take $T_{amb}=T_{PS}$
(2) evaluation form applied to the evaporating cylinders conforming with directive: 97/23/CE
(3) es.R22, R404A, R507

from Risk Analysis resulting in the following Residual Risks:

- exceeding the maximum limits of PS and TS pressure and temperature can cause the machine to explode and consequently the liquid will escape. There are however, adequate safety devices.
- contact with cold fluid can cause freezing (scalds)
- refrigerant leaks can cause suffocation in closed environments.
- the opening of the oil outlet when there is fluid in the machine causes the oil to leak.
- an elevated external temperature, such as proximity to fire, can cause an increase in temperature and pressure of the fluid in the machine.
- R717 is a toxic refrigerant!

The design and installation of the system must be carried out by qualified personnel only, and must conform to all standards of the country where the system is being installed.

e. INLET WATER

The structural differences between sea and fresh water versions are minimal:

1) the scraping blade is in plexiglass (more rigid) instead of rubber.
2) the surface of the evaporator in contact with the water has a horizontally grooved surface to improve the thermal exchange.

When using fresh water, the ice will vary depending on the hardness of the water, i.e.:

a) Almost pure water such as rain water produces ice which is partly transparent and firmly attached to the cylinder wall
b) Water with a high lime content causes a calcareous sediment to collect on the cylinder that also causes the ice to stick

In both cases, the scraping roller breaks the layer of ice which forms on the wall of the cylinder, but a loss in quality may be experienced.

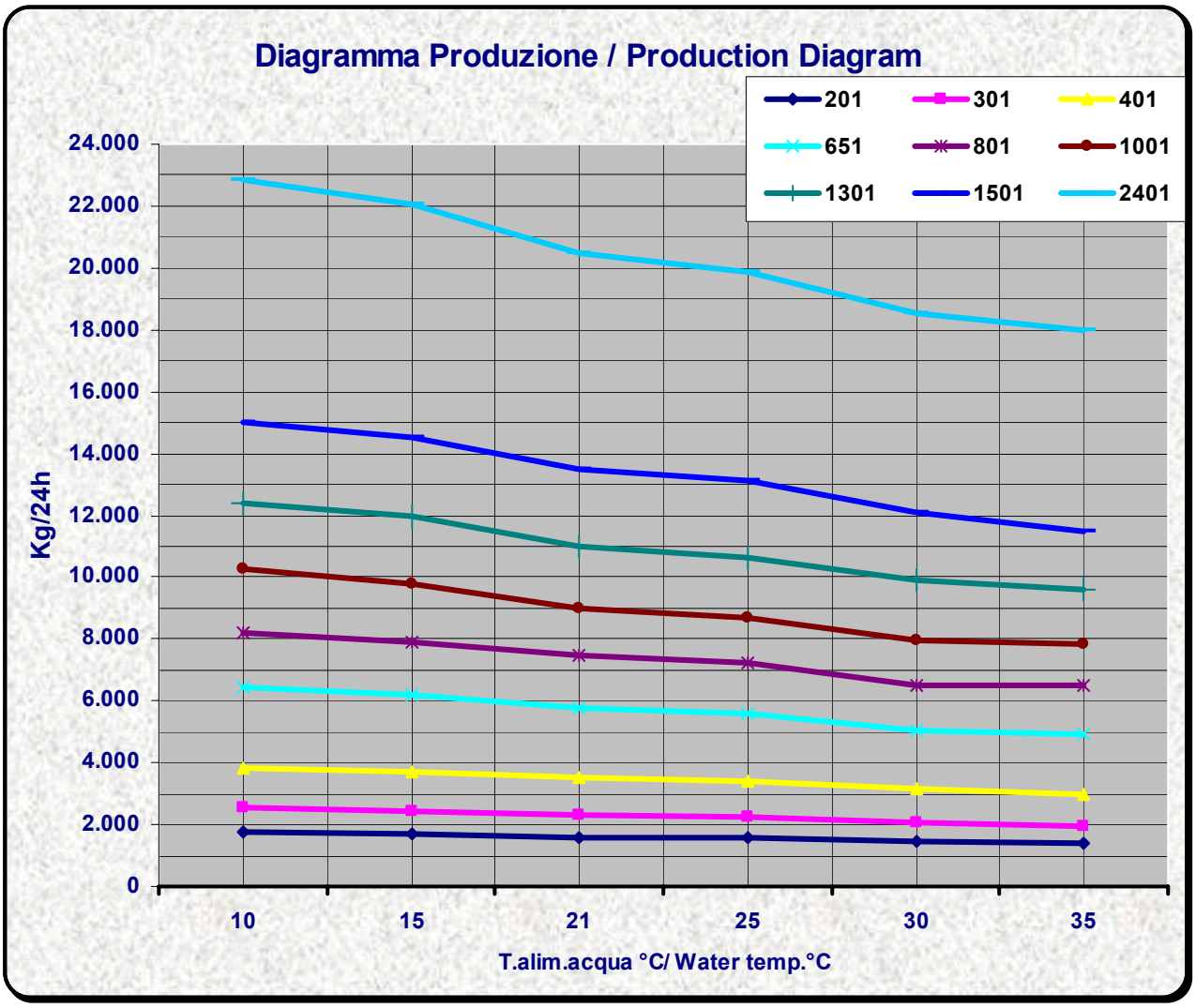
Our experience has demonstrated that the addition of a small amount of salt (sodium chloride), eliminates these problems; the ice is compact and it breaks up into larger pieces.

The amount of salt used however so low that it is not possible to taste it in the ice and it will not affect food products.
The salt can be dosed with automatic measuring devices, or by a system that automatically regulates the conductivity of the water (average 1500 uS at +17°C).

When using sea water, after checking that the machine is suitable for this type of use, it will be necessary to select a lower evaporating temperature than that used for fresh water, in order to obtain a good quality flake (normally between 4 and 8°C lower). The salinity of the water used is very important for the correct operation of the machine and often an adjustment made whilst in the harbour will provide different results when out to sea, due to different levels of salinity.

Construction Differences	FRESH WATER LAND	FRESH WATER ON-BOARD	SEA WATER LAND	SEA WATER ON-BOARD
Evaporator internal surface	AISI304 smooth	AISI304 smooth	AISI304 rifled	AISI304 rifled
Scraper material	Rubber	Rubber	plexiglass	plexiglass
Water distributor	Open, made of aluminium	Closed ring, in AISI304	Open, made of aluminium	Closed ring, in AISI304
Water sensor level	provided	Not provided	provided	Not provided
Supply for water distributor	By gravity, from upper cover	Through shaft and rotating coupling	By gravity, from upper cover	Through shaft and rotating coupling
Refrigeration Power	100%	100%	115%	115%
Evaporating Temperature	-28°C	-28°C	-35°C	-35%

III PRODUCTION DIAGRAM



Models	Ice production Kg/24h Th. 1.8-2.2mm Water temp 21°C, Ambient Temp.. 25°C	Q (W) Fresh water Evap.temp. -28°C	Q (W) Sea water Evap. Temp. -35°C
EVE201	1.600	10.000	11.500
EVE301	2.300	14.535	16.715
EVE401	3.500	19.770	22.736
EVE651	5.800	33.490	38.514
EVE801	7.500	44.190	50.819
EVE1001	9.000	55.815	64.187
EVE1301	11.000	67.445	77.562
EVE1501	13.500	89.535	102.965
EVE2401	21.000	133.720	153.778

IV TECHNICAL CHARACTERISTICS

The machine is intended to be used at room temperature.

Do not install in refrigerated rooms or in places where the temperature is too low.

If this is unavoidable, provision must be made to protect the electrical parts from possible dampness and to ensure that the water in the reservoir does not freeze.

The guarantee is no longer valid when there are signs that the machine has been used in conditions/environments outside the following:

Conditions of use:

	Minimum	Maximum
Room temperature	2°C (36°F)	40°C (104°F)
Temperature of inlet water (Fresh).	5°C (41°F) #	35°C (95°F)*
Temperature of inlet water (Sea)	2°C (36°F) #	35°C (95°F)*
Electrical voltage	-10%	+10%
Water pressure	1 bar / 14 psi	5 bar / 70 psi

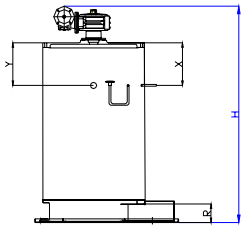
 # for lower temperatures it is advised to use a pre-heating system.

*** to obtain a good quality ice it will be necessary to reduce the water temperature to less than 25°C.**

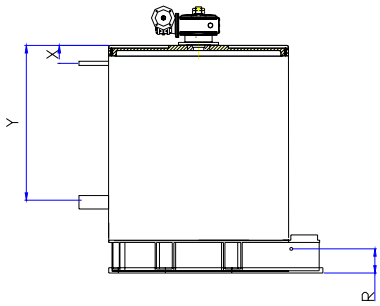
Indicative quantity of refrigerant for an evaporator used in a direct expansion system:

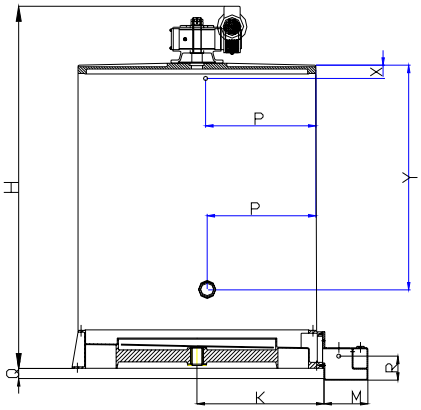
Model	R404/R507	R22	R717
EVE201	18.5 Kg	18.5 Kg	-
EVE301	27.6 Kg	27.6 Kg	-
EVE401	30 Kg	30 Kg	-
EVE651	45 Kg	45 Kg	-
EVE801	55 Kg	55 Kg	-
EVE1001	100 Kg	100 Kg	62 Kg
EVE1301	120 Kg	120 Kg	79 Kg
EVE1501	140 Kg	140 Kg	108 Kg
EVE2401	240 Kg	240 Kg	199 Kg

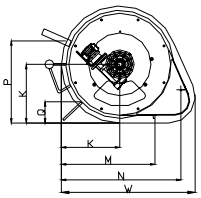
EVE201-301-401-651-801

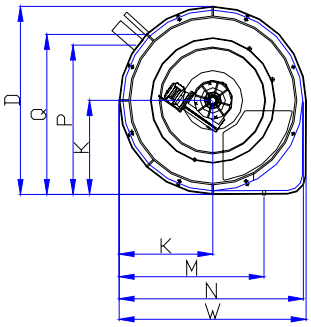


EVE1001-1301-1501

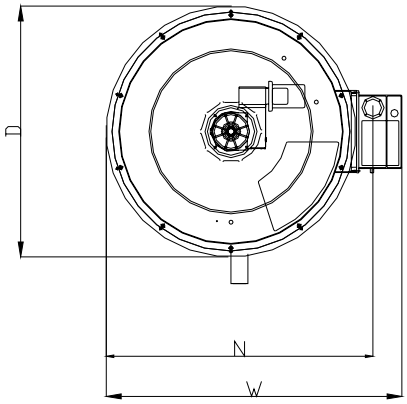








EVE2401



Model	W mm.	D mm.	H (T/B) mm	H mm	M mm.	N mm.	P mm.	Q mm.	R mm.	Net Weight Kg	Dimensions WxDxH
EVE201	900	784	1030/1135	1030	625	805	545	110	125	285	1250x1050x1340
EVE301	900	784	1230/1335	1230	625	805	545	110	125	305	1250x1050x1540
EVE401	900	784	1450/1565	1450	625	805	545	110	125	365	1250x1050x1770
EVE651	1140	1080	1530/1710	1510	800	1110	840	235	140	650	1250x1650x1720
EVE801	1140	1080	1730/1910	1710	800	1110	840	235	140	880	1250x1650x1920
EVE1001	1260	1260	1790/1990	1790	975	1240	1005	1075	150	1030	1500x1700x1990
EVE1301	1260	1260	2090/2290	2090	975	1240	1005	1075	150	1230	1500x1700x2290
EVE1501	1260	1260	2290/2490	2290	975	1240	1005	1075	150	1350	1500x1700x2490 (*)
EVE2401	1990	1680	2425/2635	2425	295	1795	745	90	160	2400	2250x2100x2725 (*)

(*) It is possible to reduce height by removing and relocating the water reservoir.

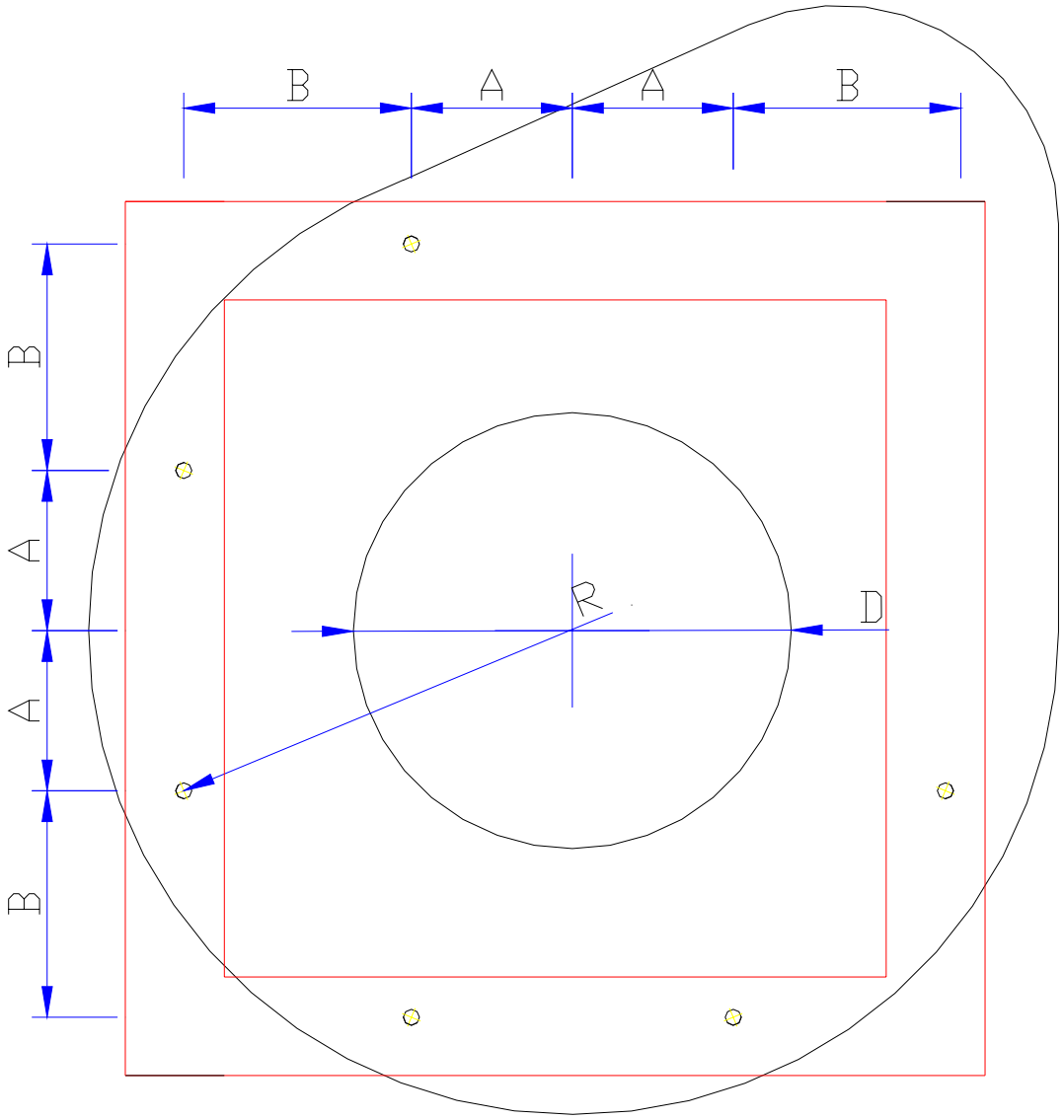
T= Land Based version *B = On-Board version*

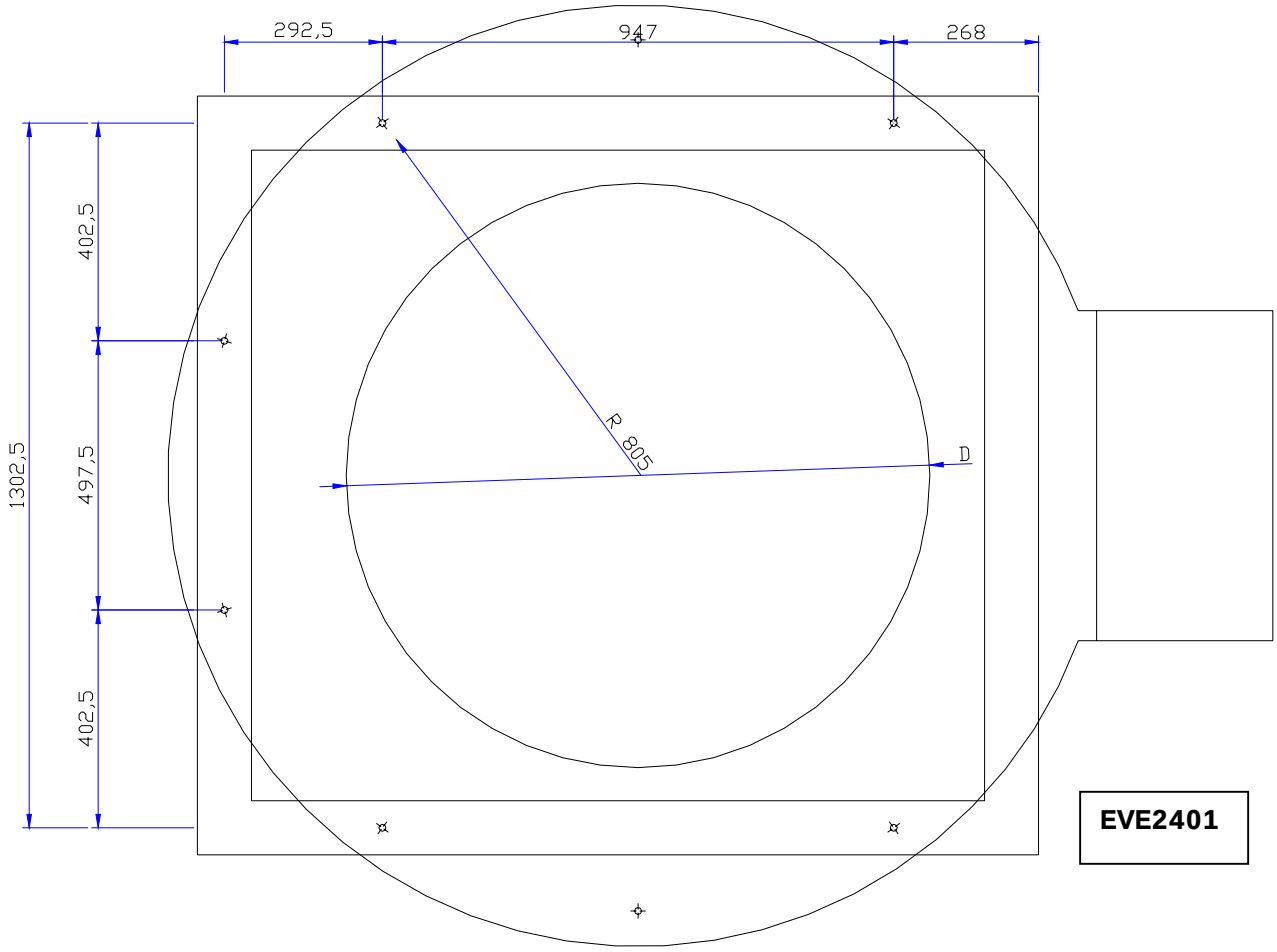
model	K mm	X mm	Y mm	Ice Outlet mm.	Inlet water Inches	Overflow mm	Liquid Pipe Ø mm.	Suction pipe Ø mm.	Scraper motor KW	Pump motor KW	Shaft rotation speed Thickness of ice: 1.8-2.2mm Sec/rev.
EVE201	395	285	285	420	1/2	10	12	42	0.25	0,20	58
EVE301	395	285	285	420	1/2	10	12	42	0.25	0,20	58
EVE401	395	285	285	420	1/2	10	12	42	0.25	0,20	58
EVE651	540	335	275	670	1/2	10	16	60	0.37	0,20	56
EVE801	540	335	275	670	1/2	10	16	60	0.37	0,20	56
EVE1001	630	120	1050	840	3/4	10	28	89	0.55	0,20	59
EVE1301	630	120	1325	840	3/4	10	28	89	0.55	0,20	59
EVE1501	630	120	1430	840	3/4	10	28	114	0.55	0,20	59
EVE2401	854	120	1430	1030	3/4	10	28	114	0,75	0,20	54

Specification and/or dimensions may change without prior notification.

DIAGRAM OF BASEPLATE

TYPE	A mm.	B mm.	Ice Outlet D mm.	Hole radius mm.	Fixing hole Ø mm.
EVE201	130	184	420	340	13
EVE301	130	184	420	340	13
EVE401	130	184	420	340	13
EVE651	190	268	670	495	13
EVE801	190	268	670	495	13
EVE1001	224	316,5	840	585	13
EVE1301	224	316,5	840	585	13
EVE1501	224	316,5	840	585	13
EVE2401	See diagram	See diagram	1030	See diagram	13




292,5
947
268
402,5
497,5
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1302,5
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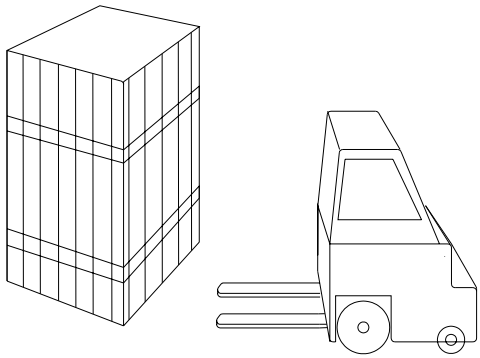
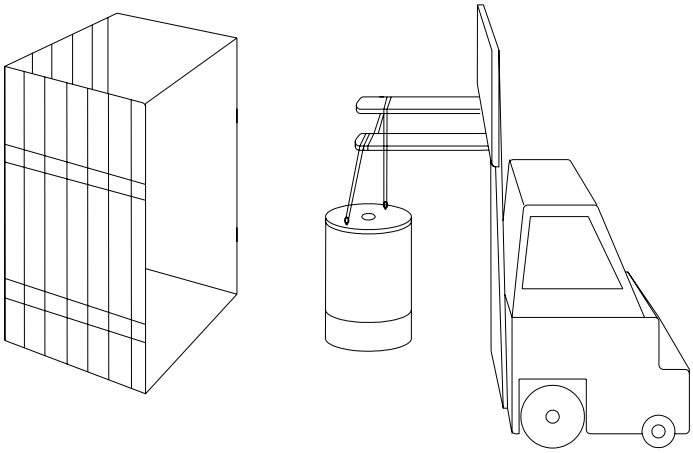
D
EVE2401

V. INSTALLATION

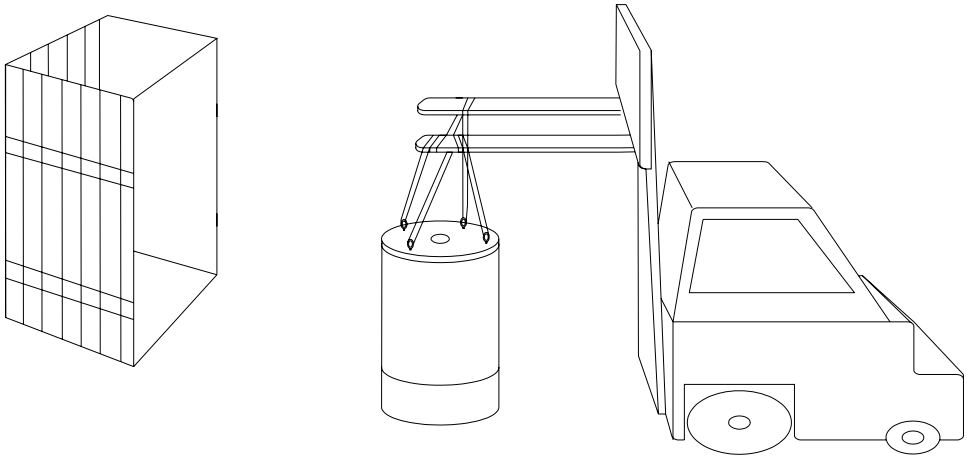
a) Handling, unpacking and disposal of packing



Check that the packaging has not been damaged during transportation.
Proceed carefully with the unpacking. To lift the equipment, secure the machine equally on all sides and lift using the rings which are fixed on the upper cover.
Do not lift equipment in any other way



All damage caused to the machine during transportation should be reported immediately to the deliverer and noted on the delivery slip.
The crate is made of a recyclable material (wooden cage + polyethylene film); dispose of it via an ecological waste disposal company dealing in the recovery of prime materials and waste disposal.



b) Positioning, leveling and access for maintenance

The equipment is factory assembled and ready to be integrated into the refrigerant system.
Position the evaporator and ensure it is level (front to back and left to right).
Remember to leave adequate space between the other components for maintenance on parts such as gear reducer, thermostatic valve/FTL, water reservoir, etc.

The ice outlet must be easily disassembled.

Drain the cylinder of any residual oil that may be present from the manufacturing pressure tests.

Ensure that the air cannot recirculate from the ice outlet (ventilation from evaporators, etc.)

c) Refrigerant system connection

The refrigerator system should be designed and installed by specialised and qualified personnel. Installation must conform to all relevant standards in the country of installation.

Check that the registration details are compatible with the those of the system.
Check that the input attachments are not blocked by foreign objects.
Safety first!
For a correct and secure installation use the right tools and protection.
The refrigerant fluid can cause suffocation; R717 is toxic and only qualified personnel can carry out maintenance on this type of system.
Contact with this can cause burns

For correct operation, the refrigerant circuit should be engineered for an hourly refrigerant capacity that is no lower than the nominal capacity of the evaporator selected and as detailed in the technical information. Attention must be given to the selection of compressor and/or condenser to suit local conditions in respect of ambient and water temperatures

The most frequently found problems are where machines have been installed in ambient conditions that have not been properly evaluated. This results in condensing problems; a reduction in evaporator efficiency is experienced.

It is important that the refrigerant circuit is equipped with:

- oil separator at the compressor outlet
- liquid receiver (accumulation bowl for the pump-down)
- safety devices (valves, taps, etc.)
- filter on the liquid and suction lines.

(protection on the compressor from possible brazing/welding residue and other impurities)

- solenoid valve
- regulating valve (for machines with level control)
- evaporator pressure regulating valve (EPR) (for centralised systems)
- pressure gauges (suction, discharge and oil)
- pressure gauge

To avoid problems if the machine should suddenly stop, it is advisable to install a liquid separator on the suction line before the compressor to avoid the aspiration of liquid. The separator is necessary for systems which work on Ammonia (R717).

We suggest that you isolate each of the components by use of valves.

If the pipe work is very long it is advisable to install clamps from the pipes onto the walls and ceiling.

The suction pipes should be insulated to reduce the effects of heat gain and condensation.

The evaporator is equipped with a Thermostatic Valve and Level Controller. Other components such as regulating pressure valves, solenoid valves etc should be fitted during installation**.**

Connection of Thermostatic Valve

Before carrying out the brazing/welding of the liquid and suction tube of the machine, block the pipes and check that the external pressure equalisation tube is not obstructed. Remember to disconnect the bulb of the thermostatic valve and then reposition it correctly once this has been completed.

Connection of the level regulator.

Before carrying out the brazing/welding of the liquid and suction tube of the machine, remove the obstructions from the piping. Connect the liquid line to one of the sub-cooling circuit lines (indicated in the technical specifications); the other side of the tube should be connected to the inlet of the evaporator installing the solenoid valve and then the regulating valve.

Notes on plant engineering (piping, oil return siphoning, oil separators, refrigerant type and volume etc.)

The size of the piping must be adeguate for the refrigerant load in order to minimise pressure drops and guarantee that the oil returns to the compressor.
The suction pipe must allow a gas speed of 5m/sec.
When the compressor group is a considerable distance from the evaporator, it is advised that the piping is kept on an incline, towards the compressor, no lower than 1%.
It is important that on the suction, devices are installed to improve the return of the oil.
When the compressor group is positioned higher than the evaporator cylinder and the difference is greater than 2 metres, it is advisable to add an intermediary siphon.
The suction collector must guarantee the sole recovery of vapour, therefore it is advisable to proceed as shown in the diagram.
The main components of the refrigerant circuit are divided with valves and taps.
The installation of vibration eliminators on the lines of the compressor is advised to eliminate problems from vibration that can damage pipe work and joints.

The copper pipes must be refrigeration quality and free from imperfections, porousness etc. The pipes which come unassembled must be provided with plugs to reduce ingress of damp and dirt.
Steel pipes are advised for systems with a large capacity and when R717 (ammonia) is used. They should be welded with TIG procedure in Argon atmosphere.

For the brazing of copper-copper tubes, alloy rods must be used. In the case of copper-steel, it is adviseable to use an alloy with a minimum 20% silver. During this stage it is very important to pay attention in order to avoid the formation of oxides and impurities in the inside of the pipes. It is advisable to let some nitrogen flow through the inside of the pipes. Always avoid brazing/welding pipes which are full of refrigerant and in environments where there is the possibility that refrigerant has leaked.

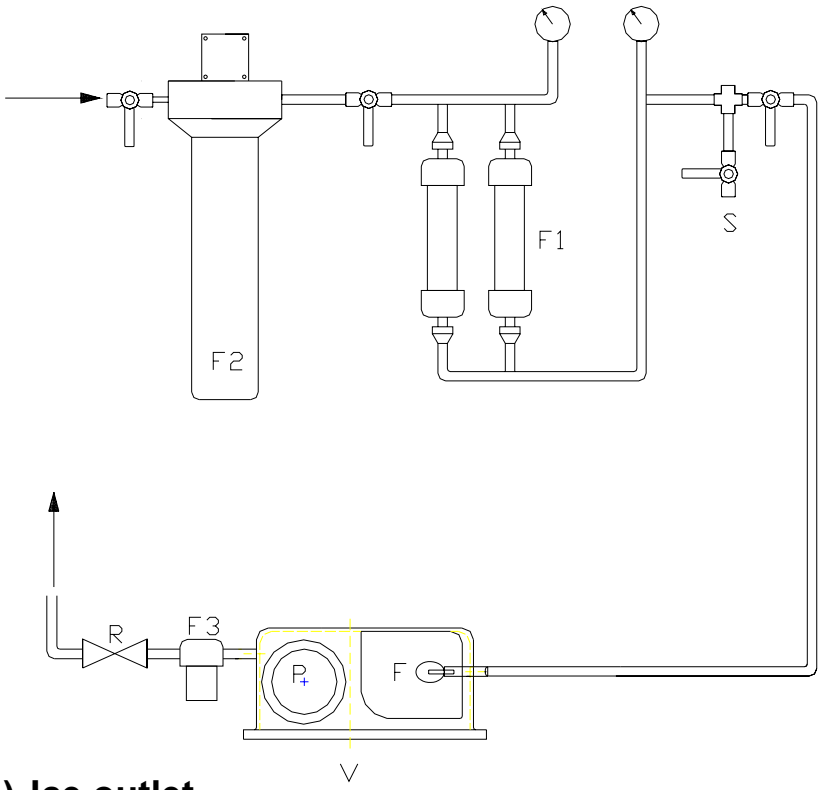
The brazing/welding of taps, valves, filters and liquid indicators, has to be carried out by disassembling the the parts that can be damaged by the increase in temperature. The parts which cannot be disassembled can be kept cold using a water soaked cloth.

d) Water inlet connection

The water used for the formation of ice, must be connected to the reservoir, an overflow pipe must also be connected.

If the temperature of the water is close to 0°C, it is advisable to pre-heat to avoid the formation of ice in the pipes and inside the reservoir.
If the water is not completely pure, we advise applying a filter system for the purification.

DIAGRAM with WATER INLET FILTER



R= regulating tap for distributor water
F3= mechanical filter
P = pump
F = ballcock
V = water reservoir
S =water outlet
F1 = cartridge filters
F2 = pre-filter

e) Ice outlet

The discharge of the ice takes place at the base of the evaporator; dimensions of the outlet are indicated in the technical tables.
It is possible to aim the outlet of ice with a stainless steel conveyor, made to measure, depending on the specific requirements.

When the machine is positioned on a storage bin, it is possibile to control the filling with the use of mechanical or optical sensors or a timer that allow the machine to be stopped on demand.

For safety reasons an ice level sensing device must be used on the outlet of the evaporator cylinder to avoid ice entering the machine and damaging the shaft and other rotating elements.

f) Electrical connection, start-up and shut-down (re-start-up) proceedures.

The refrigeration system should be designed and installed by specialised and qualified personnel. Installation must conform to all local standards of the country in question.

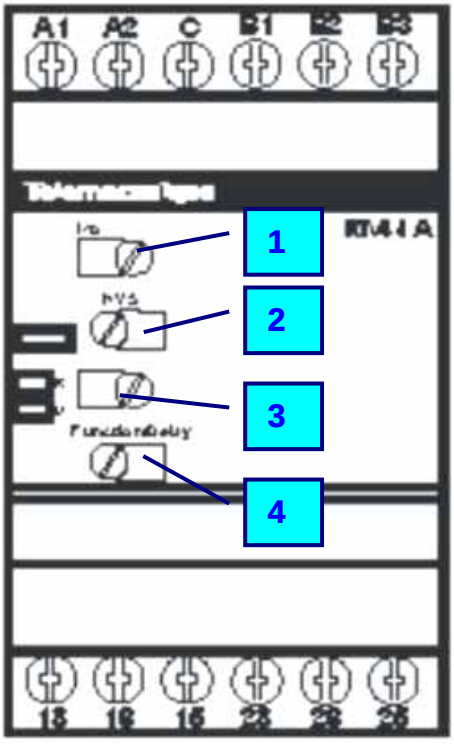
Safety first!
For a correct and secure installation use the right tools and protection.

Components to be connected:

- ***Gear reducer of the rotating shaft***
  Electrical supply: 400/50/3

Connect the **measuring relay** (overcurrent protection) supplied with the machine, to protect the gear reducer and shaft.

The control relay (control RM4JA32) measures the current on the power supply to the motor and controls its operation (see electrical circuit diagram).

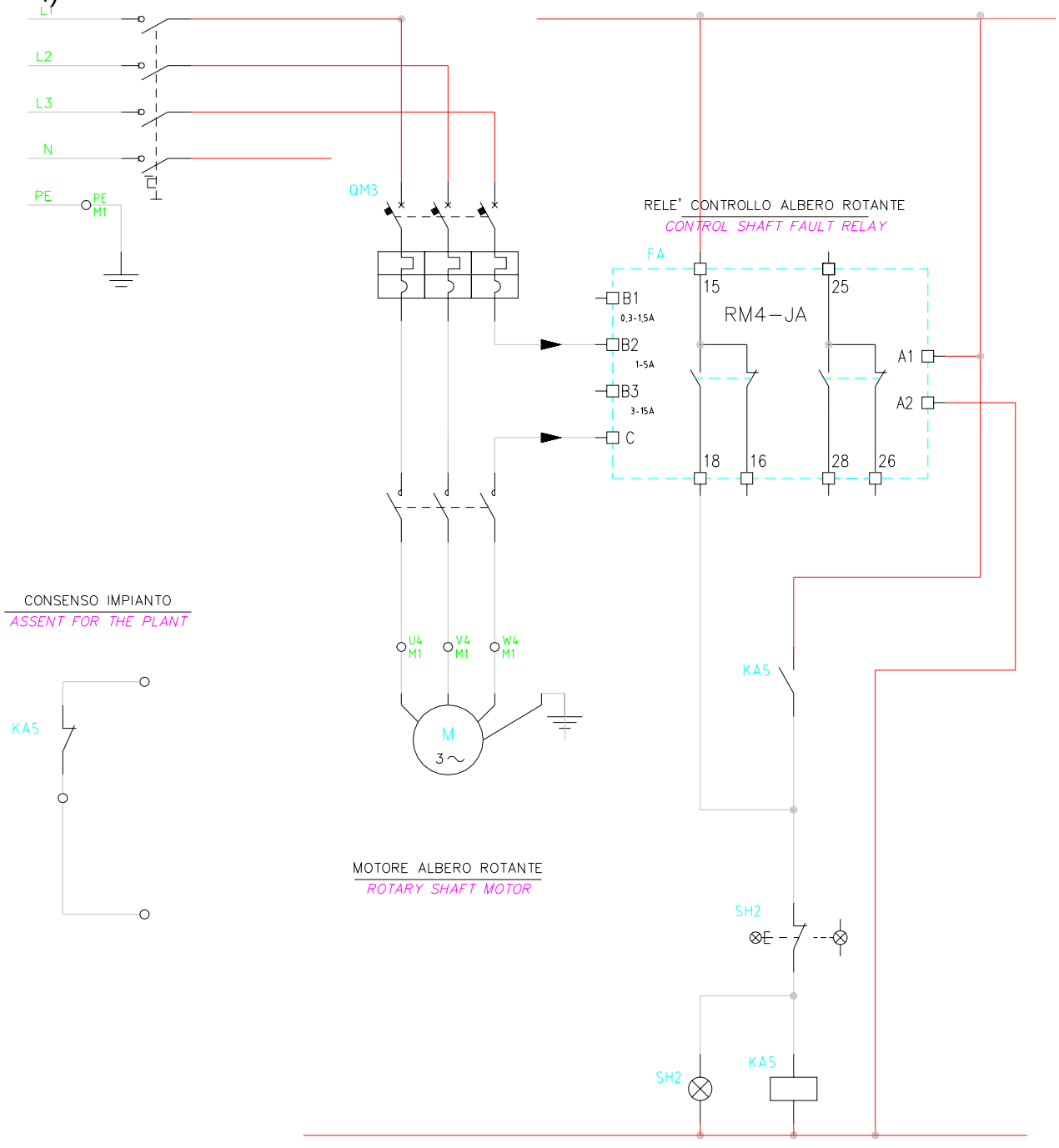


In order to avoid an excessive formation of ice before the restart, the measuring relay has to close down the water inlet and refrigerant inlet.

The current relay (gear-motor protection), has to be installed as follows:

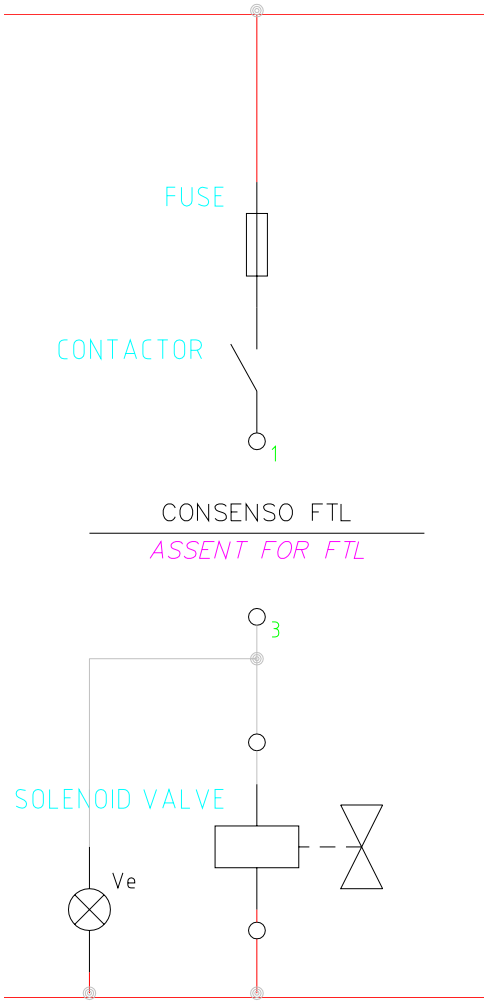
A1-A2 electrical supply 24~240V
C+B1 supply phase drive-motor (EVE201-301-401-651-801)
C+B2 supply phase drive-motor (EVE1001-1301-1501-2401)
15 +18 supply relay with manual restart for plant control

SET UP:
1) Current absorbed in normal working conditions increased by 5%;
2) Hysteresis = calibration 15%
3) Timer = calibration 50%
3) Motor function/delay = calibration to >1 sec
4)



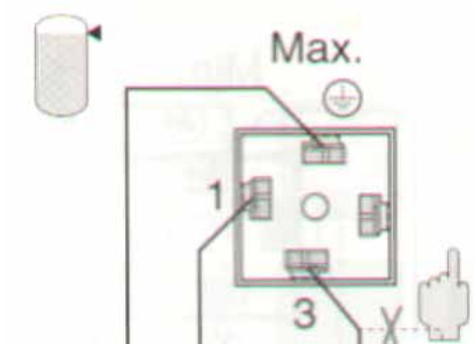
- ***Water pump***
  Electrical supply: 230/50/1

- ***Solenoid installed during installation***
  Not supplied with the machine
- ***Water level sensor (for the LAND version)***
  Connect twin cable (2x1) onto the sensor terminal and on the grounding screw fixed onto the aluminium cover. In the electrical circuit there must be a level limit switch connected to the probe.



- **Electronic level controller (FTL – when provided) – connection**

The FTL is an electronic level regulator that when inserted in a container which is connected with a system of communicating containers, regulates the flow of the liquid refrigerant to the evaporator.
It must be connected in succession with the electrical inlet of the solenoid valve.



The FTL is used in MAXIMUM LEVEL mode, connecting contacts 1 and 3 (see component manual).

<u>Start up procedure:</u>

Once the main electrical circuit has been activated, the following must be energised:

- Refrigerant solenoid valve
- Gear reducer of the rotating shaft
- Water pump

Plus start up of safety control functions:

- Water level regulator control relay
- Current relay

The low water sensor and the overload relay must immediately stop the refrigerant flow to the machine (close the inlet solenoid valve), the gear reducer and the water pump.
If there is a single system, all other components must also be shut-down.

It is advisable to include indicator lights to provide a visual indication on the status of the machine (ON/OFF), including the safety controls and possible reset buttons.

Shut-down proceedure:

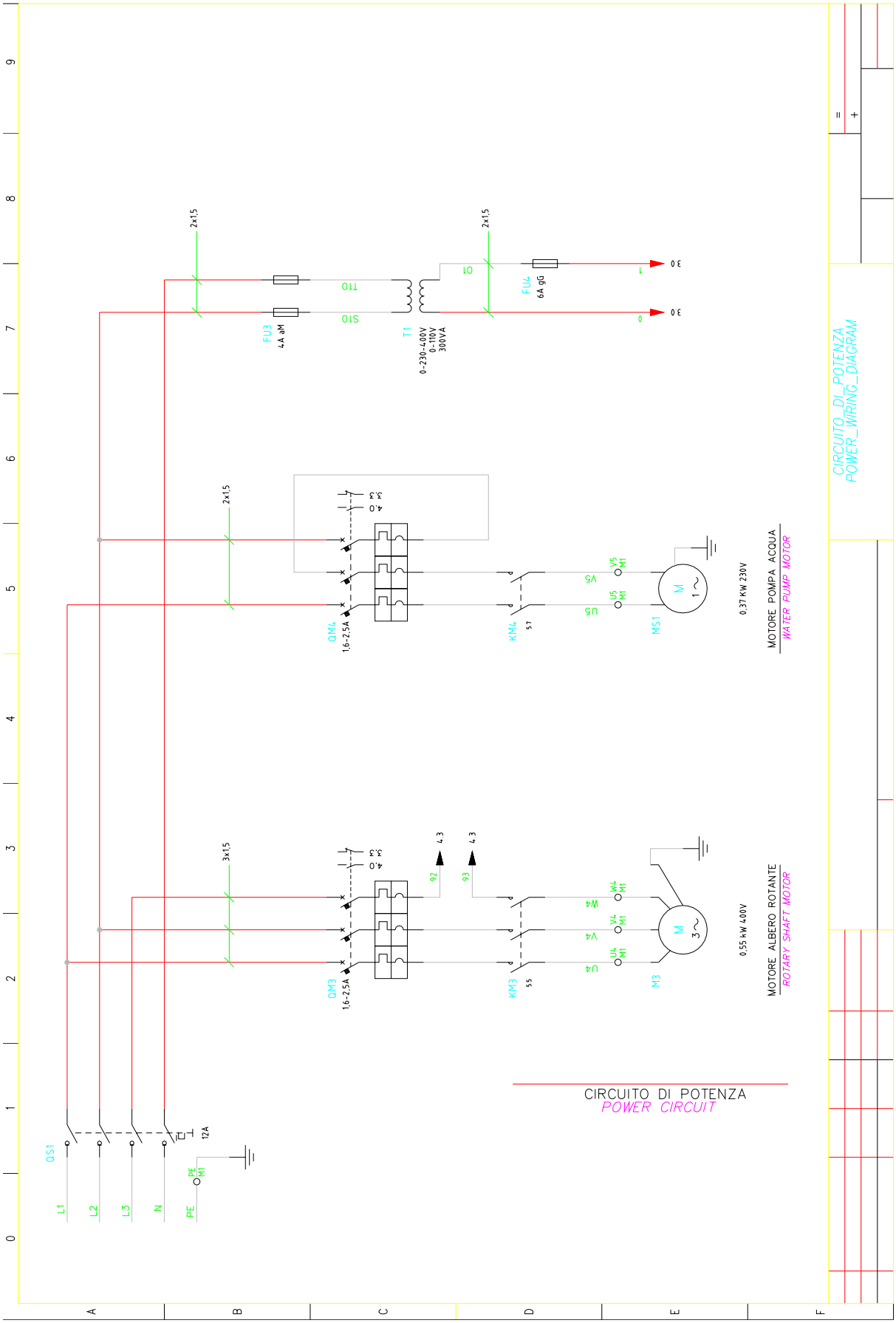
- Closing the inlet solenoid valve begins the PUMP DOWN phase; the low pressure switch measureing suction pressure will stop the compressor when the set point is reached.
- At the end of the PUMP DOWN the rotating shaft and water pump must continue working to finish cleaning the ice residue inside the cylinder; this function is regulated by a timer which has a standard delay of 5 minutes. When this time has elapsed the gear reducer and the water pump will stop.

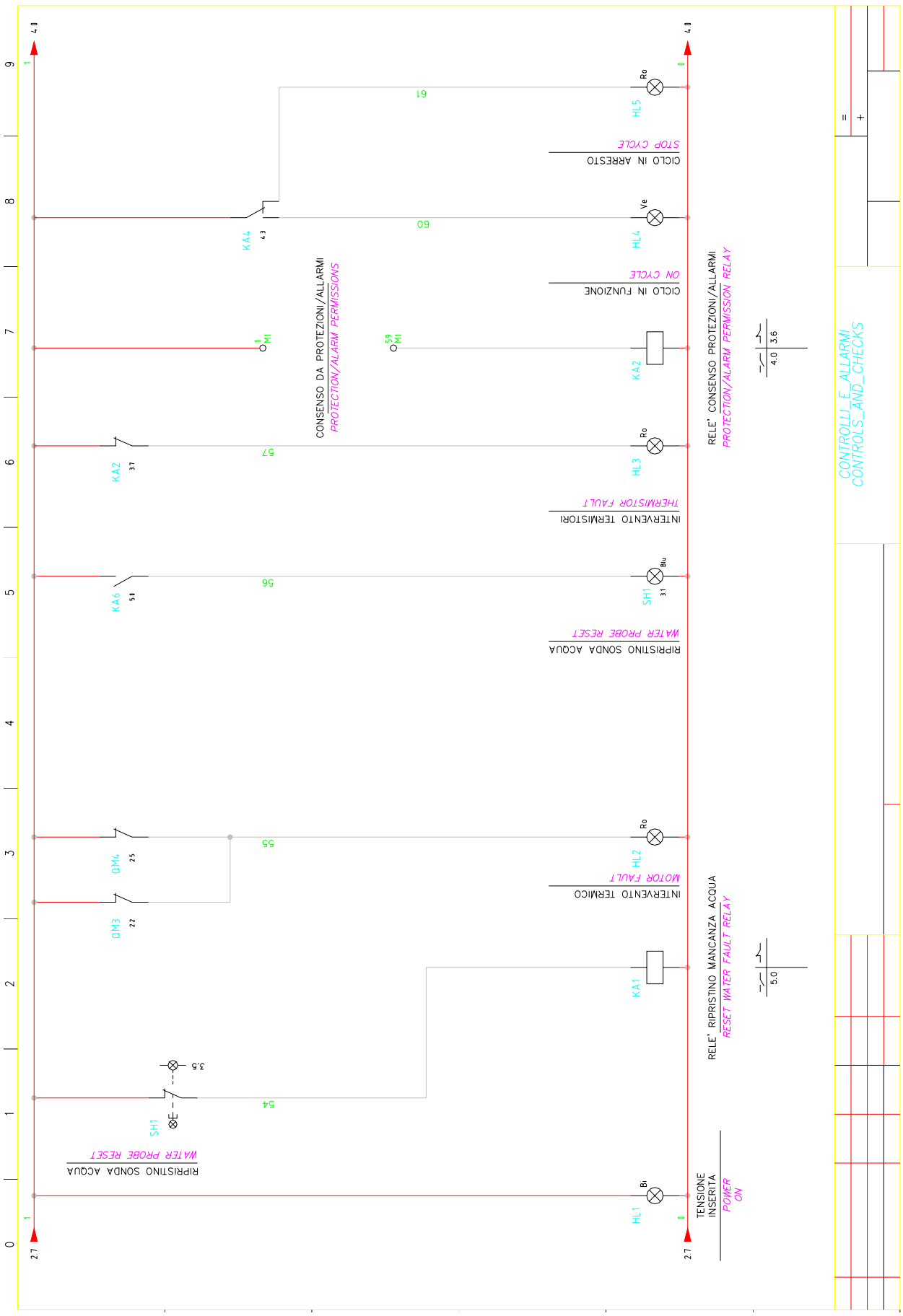
The machine is ready for another working cycle.

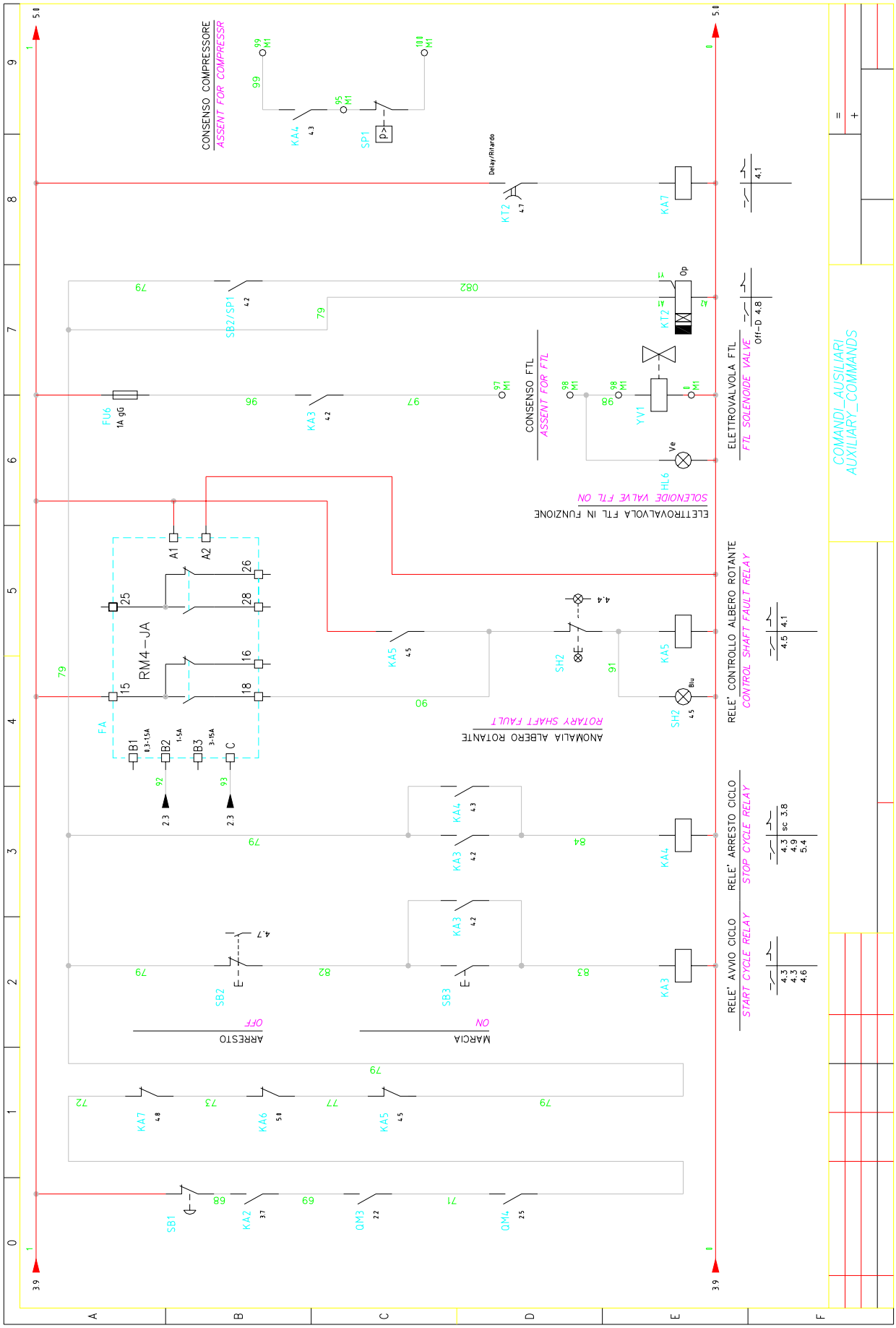
Note:

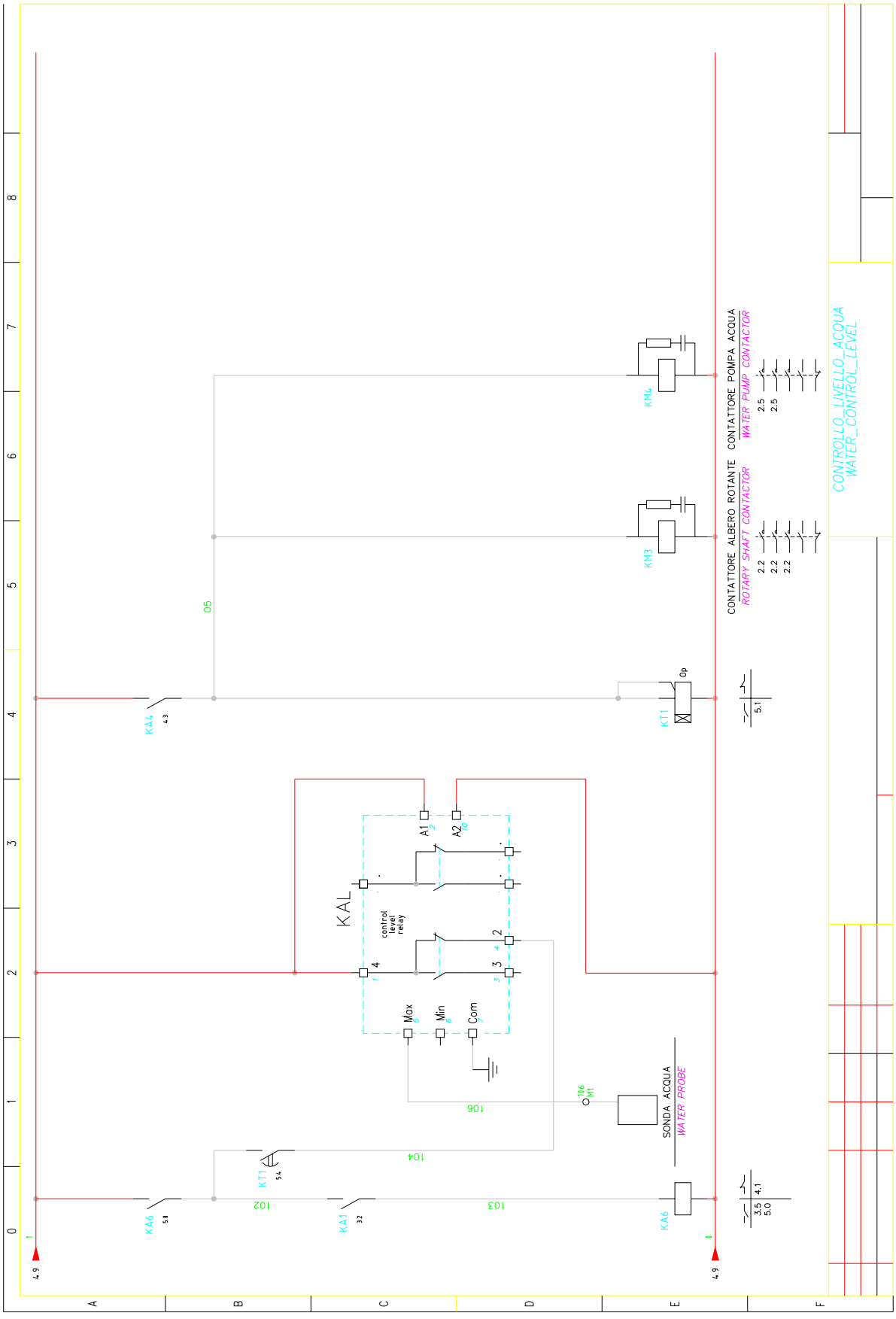
If the evaporator is connected to a central refrigeration system, it may be necessary to set a longer delay time to ensure that the pump down cycle is completed before the pump and shaft stop rotating. This time is dependant on the design of the system and the size of the ice machine and should be verified during the commissioning procedure.

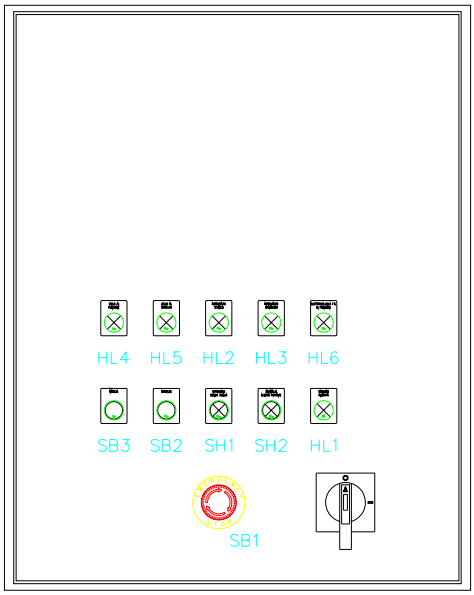
g) ELECTRICAL DIAGRAMS “Split Versions” (evaporator only)




CONTROLLI_E_ALLARMI
CONTROLS_AND_CHECKS
CICLO IN ARRESTO
STOP CYCLE
CICLO IN FUNZIONE
ON CYCLE
INTERVENTO TERMISTORI
THERMISTOR FAULT
RIPRISTINO SONDA ACQUA
WATER PROBE RESET
INTERVENTO TERMICO
MOTOR FAULT
TENSIONE INSERITA
POWER ON
CONSENSO DA PROTEZIONI/ALLARMI
PROTECTION/ALARM PERMISSIONS
RELE' CONSENSO PROTEZIONI/ALLARMI
PROTECTION/ALARM PERMISSION RELAY
RELE' RIPRISTINO MANCANZA ACQUA
RESET WATER FAULT RELAY
HL5
HL4
HL3
HL2
HL1
SH1
KA4
KA2
KA6
KA1
QM4
QM3
61
60
57
56
55
54


CONSENSO COMPRESSORE
ASSENT FOR COMPRESSR
KA4
SP1
KT2
KA7
Delay/Ritardo
SB2/SP1
FU6
1A gG
KA3
CONSENSO FTL
ASSENT FOR FTL
KT2
YV1
HL6
ELETTROVALVOLA FTL
FTL SOLENOIDE VALVE
ELETTROVALVOLA FTL IN FUNZIONE
SOLENOIDE VALVE FTL ON
RM4-JA
KA5
SH2
RELE' CONTROLLO ALBERO ROTANTE
CONTROL SHAFT FAULT RELAY
ANOMALIA ALBERO ROTANTE
ROTARY SHAFT FAULT
RELE' ARRESTO CICLO
STOP CYCLE RELAY
RELE' AVVIO CICLO
START CYCLE RELAY
SB2
SB3
ARRESTO
OFF
MARCIA
ON
KA7
KA6
KA5
SB1
KA2
QM3
QM4
COMANDI_AUSILIARI
AUXILIARY_COMMANDS


CONTROLLO_LIVELLO_ACQUA
WATER_CONTROL_LEVEL
CONTATTORE ALBERO ROTANTE
ROTARY SHAFT CONTACTOR
CONTATTORE POMPA ACQUA
WATER PUMP CONTACTOR
KM4
KM3
KA4
KT1
KAL
control level relay
Max
Min
Com
SONDA ACQUA
WATER PROBE
KA6
KA1
KT1
105
106
104
102
103

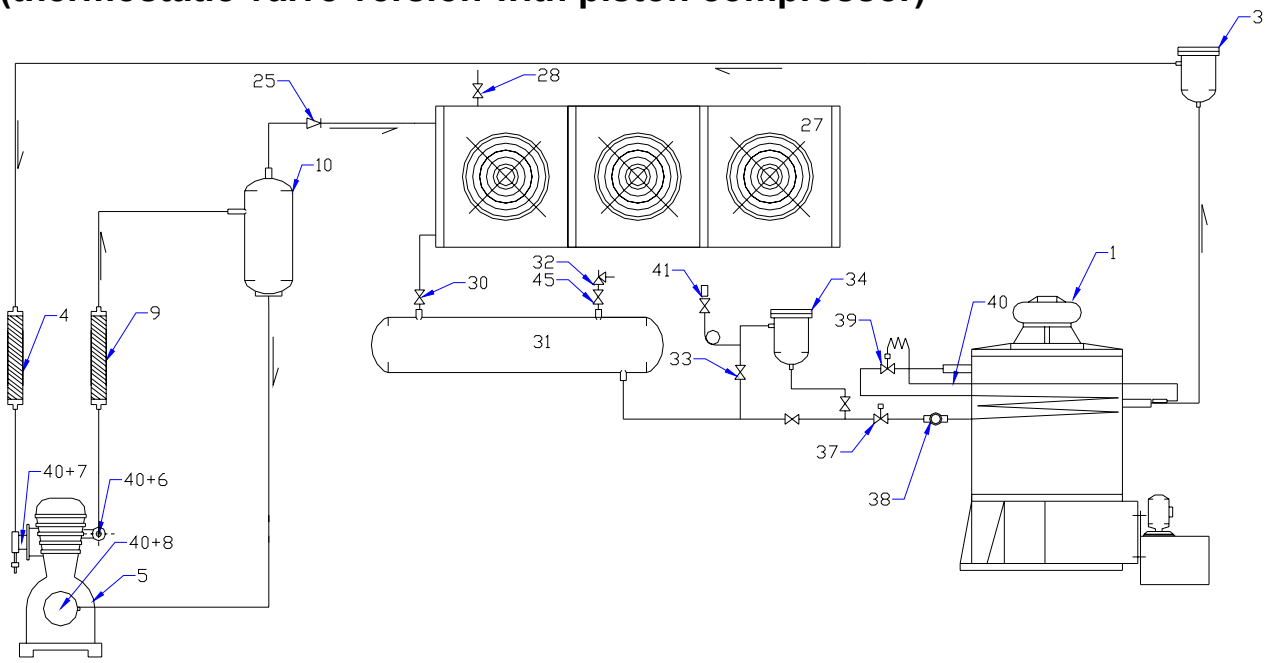


Key

Pos.	component
FA RM4-JA	Gear reducer current measure relay
FU3 -FU4 - FU6	Fuse
FTL	Level control contacts (specific models only)
HL1 - HL2 HL3 - HL4 HL5 - HL6	Indicator light
KA1 - KA2 KA3 - KA4 KA5 - KA6 – KA7	Power relay
KAL	Level control relay *(not included with On Board versions)*
KM3	Rotating shaft contactor
KM4	Water pump contactor
KT1 / KT2	Water level timer / Pump down timer
QM3 QM4	Auxiliary contact of the overload cutout switch
QS1	General disconnect switch
SB1 SB2 SB3	Safety stop button
SB1/SP1	SB1 – Stop button (for central refrigeration system) SP1 – Low pressure switch normally open (direct control)
SP1	Low pressure switch (direct control)
SH1 SH2	Illuminated button
T1	Transformer 230V – 110V
YV1	Solenoid valve

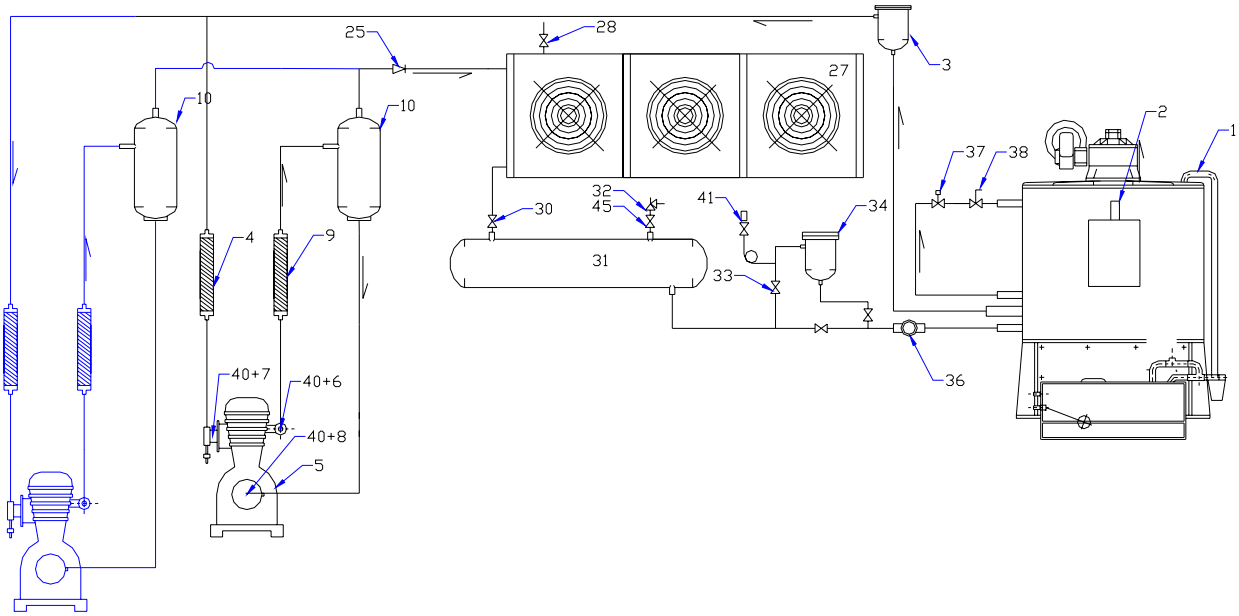
The selection and sizing of these components must be carried out by qualified personnel.

h) Diagram of the refrigerant circuit with main components (thermostatic valve version with piston compressor)



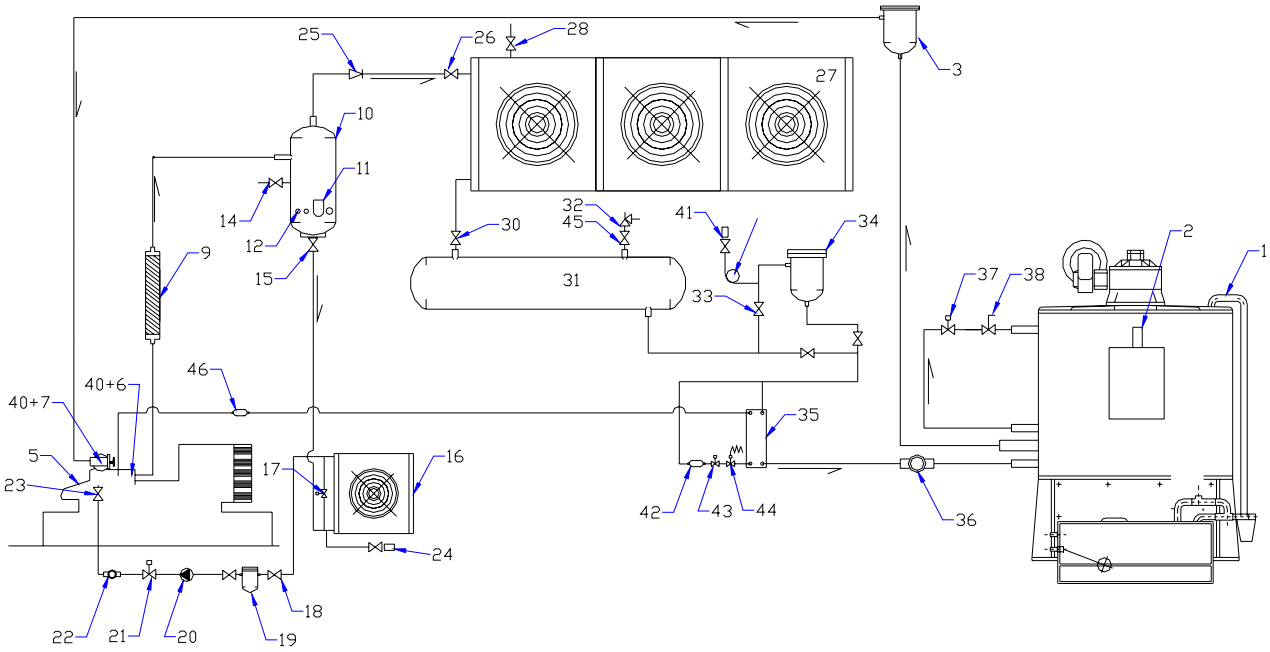
Pos.	component	Pos.	component
1	Evaporator/ice machine	30	rotalock tap
3	F1 = mechanical cartridge filter	31	liquid receiver
4	Vibration eliminator	32	Safety valve
5	reciprocating compressor	33	globe tap
6	high pressure switch	34	Solid cartridge filter
7	low pressure switch	37	Solenoid valve
8	Oil pressure switch	38	Liquid gauge
9	Vibration eliminator	39	Thermostatic Valve
10	oil separator	40	high pressure flexible pipe
25	Non return valve	41	wheel tap
27	Air cooled condenser	45	Lead sealed tap (open)
28	pressure switch		

i) Diagram of the refrigerant circuit with main components (level control and piston compressor version)



Pos.	component	Pos.	component
1	Evaporator/ice machine	28	pressure switch
2	FTL level control	30	rotalock tap
3	Mechanical cartridge filter	31	liquid receiver
4	Vibration eliminator	32	Safety valve
5	reciprocating compressor	33	globe tap
6	high pressure switch	34	Solid cartridge filter
7	low pressure switch	36	Liquid gauge
8	Oil pressure switch	37	solenoid valve
9	Vibration eliminator	38	Globe valve
10	oil separator	41	wheel tap
25	Nonreturn valve	45	Lead sealed tap (open)
27	Air cooled condenser		

j) Diagram of the refrigerant circuit with main components (level control and screw compressor version)



Pos.	component	Pos.	component
1	Evaporator/ice machine	22	Liquid gauge
2	FTL level control	24-41	wheel tap
3	Mechanical cartridge filter	25	Nonreturn valve
5	screw compressor	26-33	globe tap
6	high pressure switch	27	Air cooled condenser
7	low pressure switch	28	pressure switch
9	Vibration eliminator	31	liquid receiver
10	oil separator	32	Safety valve
11	Oil thermostat	34	Solid cartridge filter
12	oil resistance	35	plate exchanger
13	oil level indicator	36	dampness indicator
14-15 23-30	rotalock tap	40	high pressure flexible pipe
16	Oil cooler	42	mechanical filter
17-21 37-43	solenoid valve	44	Thermostatic Valve
18-38	Globe valve	45	Lead sealed tap (open)
19	mechanical cartridge filter	46	mechanical filter
20	Flow meter		

VI. START-UP and ADJUSTMENT (mechanical, water, electric)

After carrying out the assembly of the refrigerant system, water inlet system and electrical system, the machine can be started-up after evacuation and charging with refrigerant.

The refrigerant charge should only be introduced after the evacuation process is completed and the machine has been seen to be in perfect condition. The system will be filled with the appropriate quantity of refrigerant, calculated from the volume of the evaporator and the volume of the condensing circuit plus the pipe work.

It is advisable to check that the position of the scraping roller corresponds to the original position during assembly. Its distance from the wall of the cylinder must be 0,4 mm, at room temperature of approximately 20°C.
The roller must never touch the surface of the evaporator, contact will damage the surface.
The adjustment of this distance is achieved by loosening the bolts that keep the box supports fixed, (positioned on the upper and lower part of the roller holder arm) and by moving the roller until it reaches the required distance. After carrying out the adjustment, ensure that the roller does not move whilst retightening the fixings.

Check the scaping blade is in contact with the cylinder to ensure residual ice is removed from the evaporator surface.

Verify that the overload drive-motor protection is connected and the valves of the water system are opened.

At start-up, check the rotating direction of the shaft (anti-clockwise).

Check that the working suction pressure is as shown in the technical specifications.

In all systems it is necessary to top up the lubricating oil, due to the combination of oil/refrigerant in the circuit. A few hours after the start-up of the system, it is advised, as a precaution, to check that the level of oil compressor is normal.

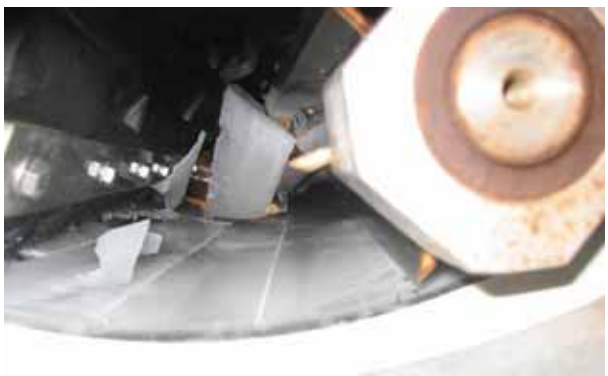
The system could initially have a low quality ice production and it will be necessary to make some adjustments.

a. completely open the downstream tap on the recirculation pump; close the tap slowly, until there is a constant level of water in the distribution channel without spillage and excessive return of water into the reservoir (LAND version) and the vertical distributor sprays the cylinder surface from all holes

b. Salt addition – fresh water:

Low salt dosing: ice is very dry and breaks in to small peices; the machine becomes noisy and the ice breaks before the scraper arrives at the right position. Mechanical stress increases on the shaft with potential intervention of gear-motor overload protection device, and possible damage to the bushes.

High salt dosing: ice is very soft and not really subcooled; there are areas where the ice did not detach; blocking the shaft.

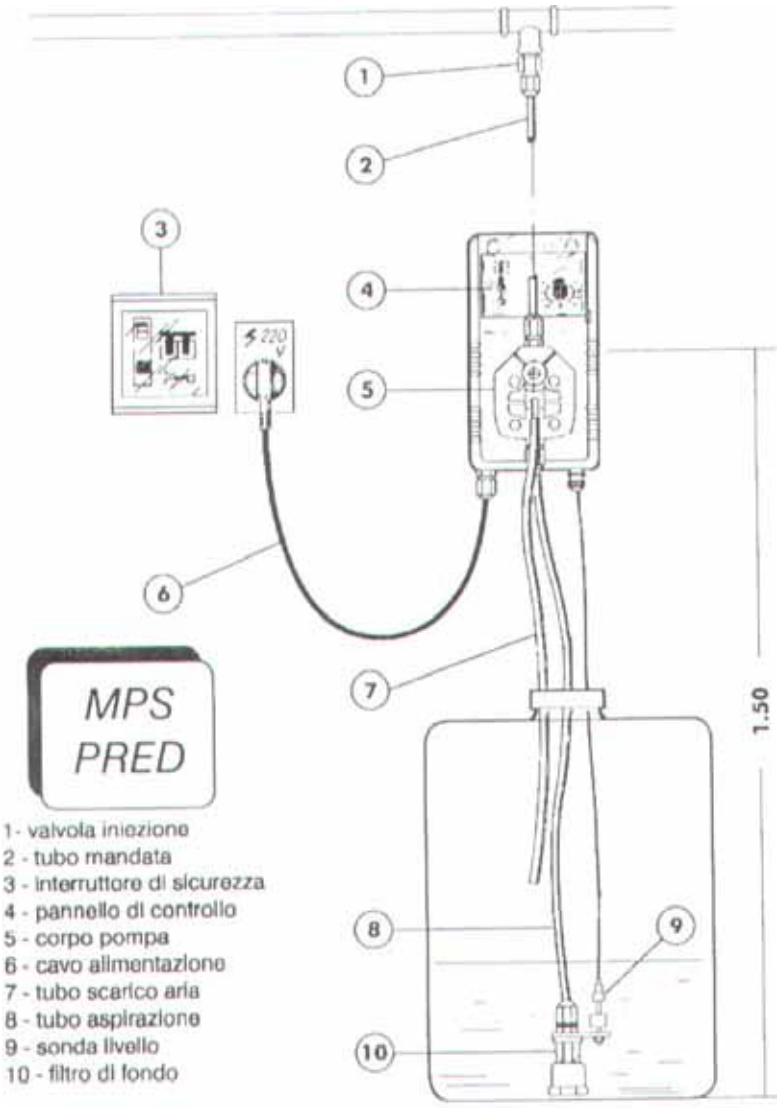


Salt dosing can be done with the manual dispenser or with the feeder pump.

b1. Automatic salt feeder pump: MPS 03 07 PRED (IP65)
Electrical supply 230V/50-60/1 (198-242 VAC) – Do not install directly on inductive load – provide electrical contactor. The pump should be protected by a fuse 230VAC/630mA 16W.

The water supply pipe sends the brine (solution of water and Sodium Chloride-NaCl) directly into the water reservoir through the injection valve.
Suction pipe should be placed in the brine tank together with the level control probe and the water drain.
Between water tank base and salt feeder pump the difference in level should not be more than 150 cm.

Operation/connections: connect transparent suction pipe to suction link (bottom valve on pump body) taking care to connect the pipe before the metal ring and pipe-stop; then connect the cone to the end. Check the valve O-ring and tighten the metal ring by hand. Place the suction filter on the water tank bottom. Suction pipe has to be short and straight to avoid bending that can prevent the pump working correctly.



The pump body has a manual venting valve. To prime the pump procede as follows:
Place one side of the transparent pipe onto the valve pipe connector and the other side into the brine tank. Turn the handle on the pump body anticlockwise to open the valve. Start the pump and turn the flow to 50%, the air in the pump body will be pushed by the membrane out through the valve. Once the air is removed and the brine flows from the valve, close the valve.
To help with the priming if the brine solution is very concentrated, remove the air from the valve pipe with a 20 cc syringe after having started the pump and opened the valve.

The feeder pump is provided with a level alarm. When the brine falls below the minimum level, a red LED will light and the pump will stop.

The dosage is constant, with the possibility of modifying the flow rate from zero to 100%. The front panel handle allows modification of the electronic system. It is advisable not to adjust the pump flow from 0 to 10% because this may cause an irregular flow rate.

The bottom part of the filter should be cleaned once a year but if there are crystals present, it is suggested that cleaning should be carried out more frequentely.

WATER/BRINE TANK
To avoid saturation of brine do not add more than 30% of salt by weight.
As adjustment of the pump regulates the brine flow rate it is possible to meet the majority of customers requiments in respect of ice hardness and temperate.

b2. manual dispenser pipe in plexiglas: compressed salt tablets should be inserted and the hole at the bottom of the pipe should be gradually enlarged until the correct dosage is reached, this depends on the water hardness.
NOTE: When the machine is stopped for a long period, the Plexiglas pipe should be removed to avoid re-starting with increased concentration of salt. This may lead to a formation of ice that is too soft and could block the ice-breaker.

b3. manual dispenser drawer with double basin: add salt to the external basin; regulate the flow of water until the desired condition is achieved.

With sea water machines it is not necessary to use these methods.

<u>If a variation in the quality of the ice (temperature) is required, it is not necessary to make alterations to the refrigerant system, it is enough to close the last holes in the distributor (closest to the ice-breaker) thereby obtaining a greater sub-cooling surface.</u>

However, on all machines, the opening of the thermostatic valve or damper can be regulated to alter the expansion temperature for a greater or lower sub-cooling of the ice.
If the ice production is too low, proceed as follows:

- from the inspection window check the frosting on the evaporator surface if this is not complete, open the thermostatic valve to increase the quantity of refrigerant
- re-check the level of frosting, proceeding as above until maximum production is reached.
- if necessary add more refrigerant (sight glass with presence of bubbles)

If you wish to use the ice machine to obtain a daily amount which is lower than its capacity, it is advisable not to alter the refrigerant system but to stop the machine when the required amount of ice has been produced (timer or manual operation by the operator).

Only in cases when the reduction has to be referred to the hourly production is it advisable to make alterations to the refrigerant circuit, reducing the refrigerant power of the compressor (partialisation or variation of a number of turns) and at the same time reducing the quantity of water which flows over the evaporator surface (it is sufficient to close some holes of the water distribution channel).
The stopping of the production can be done at any time without experiencing problems, providing the time is less than 10-15 minutes. If however, the machine needs to be stopped for over an hour, it is necessary to empty the gas contained in the evaporator cylinder by using the pump-down facility.

A problem may occur when the machine is off for a long period and the temperature of the room where the machine is installed drops below 0°C. In such a case, it will be necessary to empty the water reservoir and all associated piping from the water supply, alternatively heat the area where the machine is installed.

N.B. After 48 hours of working, it is advised that you substitute/clean the suction line filter in order to remove any oxidisation from brazing/welding or impurities that were present in the systems components.

Water quality varies from area to area.
It is recommended that a chemical analysis is carried out to ensure that correct cleaning/filtering/feeding systems are installed to prolong equipment life.

SALT DOSAGE		gr. NaCl in 24h (t.water +15°C)	
Model	Prod.Kg/24h	MIN.	MAX.
EVE 200/201	1400 - 1900	90	210
EVE 300/301	2100 - 2900	130	320
EVE 400/401	3400 - 4000	200	430
EVE 650/651	5000 - 6200	300	700
EVE 800/801	6500 - 7700	400	850
EVE 1000/1001	8500 - 10000	500	1.100
EVE 1300/1301	10000 - 12500	600	1.400
EVE 1500/1501	13500 - 15000	800	1.700
EVE 2400/2401	20500 - 23000	1.200	2.600

VII. CLEANING, MAINTENANCE and REPLACEMENT PROCEDURES

Maintenance is minimal, but should be carried out regularly, paying attention to any abnormalities, thereby avoiding small malfunctions becoming major break-downs.

Maintenance is as follows:

1. check the distance of the scraping roller and scraping blade to wall of the evaporator and check the two bushings, adjust/replace as necessary.

2. cleaning of the filter with compressed air. Normally dirty filters lead to a shut-down of the machine, caused by an intervention from the control system

3. drain the evaporator of oil. First stop the system and empty the machine of the refrigerant liquid, wait a few hours, to allow the oil to warm up, and then open the release tap.
This operation gives excellent results, if repeated several times at hourly intervals.
The accumulation of oil in the evaporator can over time, lead to poor machine performance (production decrease), leave a deposit on the level regulator (FTL), thermostatic and other devices, with consequent malfunctions.

4. replacement of the ice-breaker shaft bushing (advised once a year)

5. Cleaning
   It is advisable to clean all parts that come into contact with water, at least once a year (internal surfaces, water distributor, piping, pump and filter).
   If the water is extremely impure and very calcareous, it may be necessary to carry out cleaning more regularly
   Use Scotsman CLEANER diluted in warm water (30-35°C), in the following quantity:
   1 part water to 3 parts cleaner
   Allow only the pump and reducer to work for a minimum of 30 minutes, maximum 2 hours, depending on amount of contamination
   Once the cleaning stage has come to an end, circulate water only for 15-20 minutes to rinse the machine and remove traces of cleaner.

6. Check and unblock obstructed holes in the water distributor

a) REPLACEMENT OF GEAR REDUCER and MOTOR

To replace gear reducer proceed as follows:

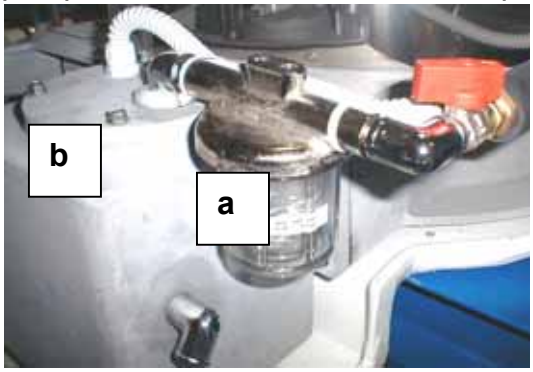
1) disconnect/switch off the electrical supply for the general circuit
2) disconnect the electrical cables from the gear-reducer
3) remove the nut and locknut from the machine's rotating shaft
4) remove the four screws from the gear-reducer cover
5) with an extractor remove the gear reducer from the rotating shaft
6) fit the new gear reducer by reversing the procedure
7) when starting the machine check that the shaft is rotating in the direction indicated by the arrow (anti clockwise)

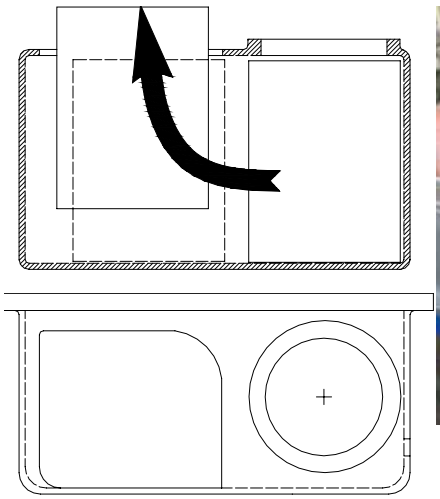
The oil used in the reducer is "long life" and it is not expected that it will have to be changed during the life of the reducer; in cases of accidental spillage it is standard practice to re-use it. If this is not possible, it is advisable to completely replace it with another similar type of oil. Each producer of lubricant has a comparison table and any synthetic oil with 220-320 grade can be used.

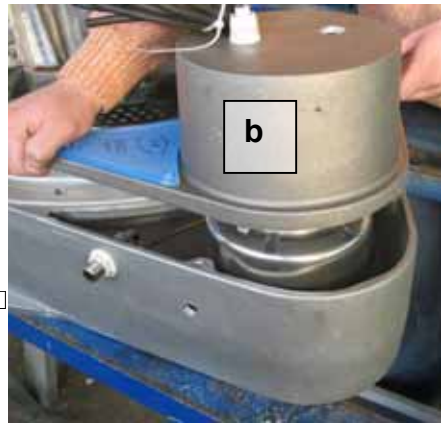
AGIP TELIUM OIL SC320
SHELL TIVELA OIL SC320
KLUBER SYNTHESO D 200 EP
FINA GIRAM S320
ESSO GLICOLUBE RANGE 220

b) WATER PUMP REPLACEMENT

Disconnect/switch off electrical supply to pump circuit. Disconnect the electrical cable from the connector block, disconnect the copper pipe, the filter and coupling that enter the water reservoir (a); remove the pump cover unscrewing the bolts, (b); remove the pump from inside the reservoir. Replace the pump with a new one, in reverse order.

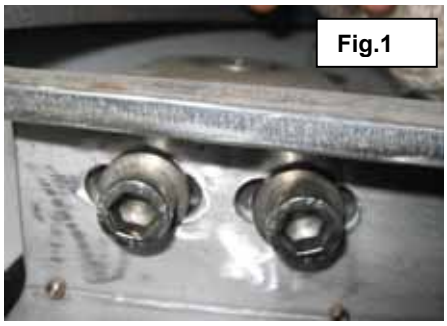






c) REPLACEMENT of ICE-BREAKER BUSH and SCRAPER

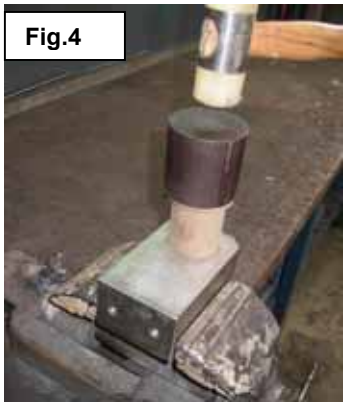
Stop the scraping roller in a position that enables you to access it from the upper access area.



Slacken the two socket head screws behind the ice-breaker support (fig.1).
Slacken the adjusting screw (fig.2)

Remove the support, place in a vice and with a hammer and plastic cylinder, apply pressure until the bush is removed.

Insert the new bush with a wooden cylinder or similar to distribute the mechanical pressure during the forced insertion. (fig.3/4).
Re-position the upper support fixing it loosely with the socket head screws. Before unscrewing the lower support, the shaft should be secured with an eyebolt (fig.5) so that it does not fall.



Repeat the same operation as used for the upper support, tighten all screws
Check that the roller rotates freely (without coming into contact with the evaporator); if it is off-axis, proceed by loosening the adjustment screws and adjust as required, (see start-up and adjustment).

For the replacement of the ice-breaker follow the same procedure. Slacken the screws on the upper support; remove the roller and the upper and lower supports. The lower support is accessible from the ice outlet.

Lower support registration screw

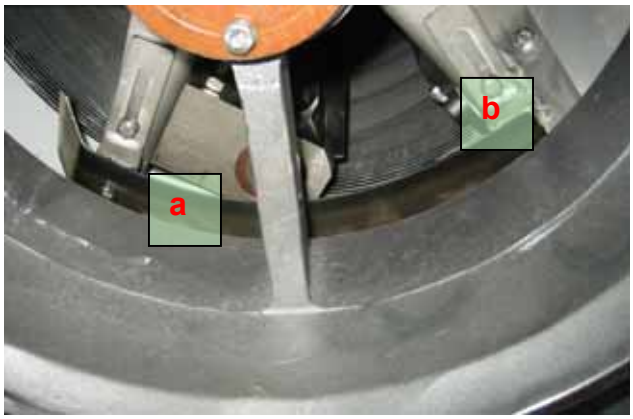
lower support - socket head fixing screws

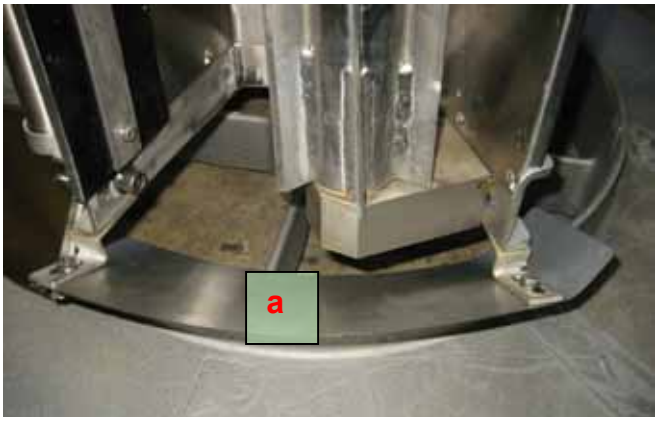
d) REPLACEMENT OF THERMOSTATIC VALVE / FTL

Before replacing the part, check that there is no refrigerant in the evaporator.
Proceed with the necessary operations in order to bring the valve / FTL to a state of good working order.

e) REPLACEMENT OF DEFLECTOR

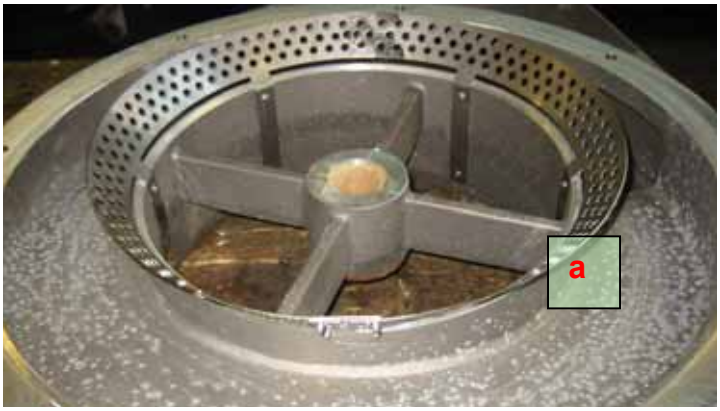
The lower deflector (a) is fixed onto the V support arms of the rotating shaft and the scraper with two M8 screws (b). The disassembly of the deflector should be carried out from the lower part of the ice outlet by unscrewing the two screws. This will allow removal of the deflector and fitting of replacement.

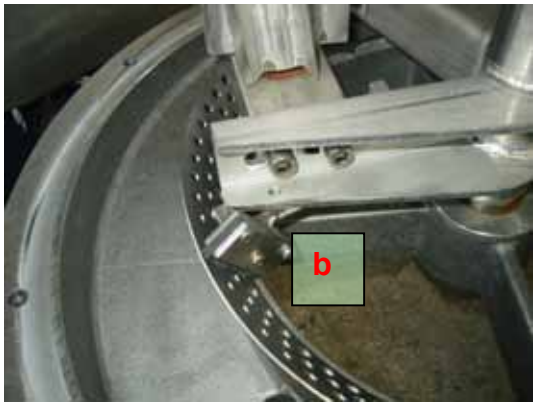


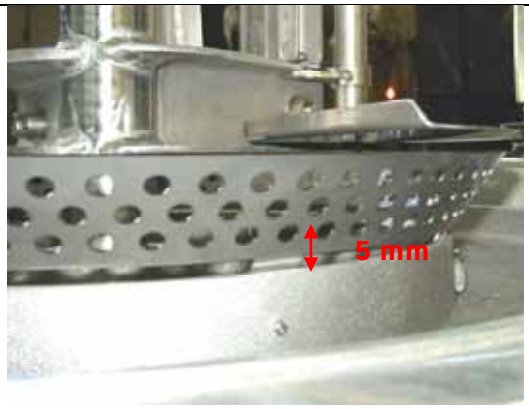


f) REPLACEMENT DEFLECTOR and DRIP TRAY (until June 2006)

The deflector is manufactured in two parts fixed together with rivets (a).
The deflector brush (b) is placed in contact with the deflector and fixed with M8 screws to the V arm of the rotating shaft.







The drip tray is placed few millimetres above the deflector to collect water not frozen on the cylinder surface.
It is very important that this component is draining the water toward the external side of the machine (water reservoir) .This position must be re-checked every time the drip tray is removed/replaced.

Dismantling of deflector has to be carried out from the lower part/ice chute, by removing the rivets and the two parts of the deflector.
A small drill or flexible drive will assist with the removal of the rivets, especially for the small machines: EVE201-301-401.

Positioning a new deflector has to be carried out by positioning the two parts, then fix together with rivets and finally fix on to the base. Leave a 5mm space between base and deflector.

g. REPLACEMENT SHAFT BUSHING

The lower shaft bush (A) is positioned on the outside of the shaft support base.
The disassembly procedure is carried out from below the machine by unscrewing the 4 fixing screws, to extract the bush from this lower part, use a pipe wrench or similar and turn the bush in an anti-clockwise direction.

VIII. RE-START PROCEDURE AFTER SUPPLY INTERUPTION or EMERGENCY STOP

In the eventuality of the machine experiencing an unexpected loss of power,or the machine stopping because the gear reducer is blocked with ice or it was stopped unexpectedly for safety reasons, the evaporator will be flooded with refrigerant.
On the re-start of the refrigerant system the presence of liquid in the suction line can seriously damage the compressor (especially with the ammonia models).
To avoid this problem, we suggest you proceed as follows:

- check that the ice-breaker is free from ice (possibly by rinsing with water)
- empty the refrigerant out of the cylinder with a Pump-down procedure, having firstly partially closed the suction valve.
  re-start the machine in normal working mode with all valves returned to their normal position.

IX. FAULT ANALYSIS

Following is a list of the most common faults; for each fault the probable cause is indicated and the operations to carry out on the system's components to achieve normal working.

a. LACK OF ICE:

Ice production will normally only stop whilst the system is operational due a fault associated with either a reduction in refrigerant at the evaporator or excessive discharge temperature/pressure. This will be indicated by either a low suction pressure or high discharge pressure. It is possible however, that the cause may be of a lack of water in the system as the electronic controls would have stopped the equipment (LAND version).
A reduction in refrigerant can be caused by a faulty FTL (check the electrical supply) or a fault on the thermostatic valve that controls the flow of liquid.
In either case the repair is simple: i.e. replace the faulty component (solenoid coil, capillary, FTL).
To check if the FTL is faulty, connect a tester (Ohm resistance meter) onto contacts 1 and 3; immerse the FTL in a bowl of water and see if by changing its position in respect to the water level, the tester shows a variation in the continuity (ON/OFF).

b. NON UNIFORM FREEZING

There are various possible solutions:
b1. Vertical lines: the water is badly distributed by the distributor (blocked holes, dirty water filter, etc.).
For this repair these components should be unblocked or cleaned.

b2. Lack of ice in the upper part of the cylinder: the flow of refrigerant is insufficient
Adjust the regulation tap or the thermostatic valve and if still insufficient add more refrigerant.

b3. Discoloured, thinner ice: there is oil in the evaporator cylinder
Therefore it is necessary to remove it by using the appropriate release tap (see cleaning and maintenance)

b4. Excessive thickness of ice: results in an irregular movement of the scraping roller and the rotating shaft. This is caused by too much refrigerant entering the evaporator, adjust/replace expansion valve or check operation of FTL Another cause is the speed of the rotating shaft, check operation.

c. REDUCED PRODUCTION

c1. It is mainly caused by a reduction in thermal exchange a dirty FTL or thermostatic valve usually due to the presence of oil in the evaporator. Remove the oil as described in cleaning and maintenance.

c2. Insufficient input of refrigerant liquid.

d) ICE WHICH IS DIFFICULT TO BREAK:

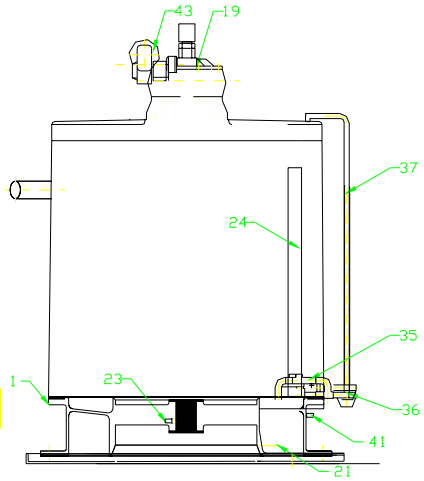
Check the distance between the scraping roller and scraping blade and adjust as required, if the problem persists add some salt to the water, see start-up and adjustment.

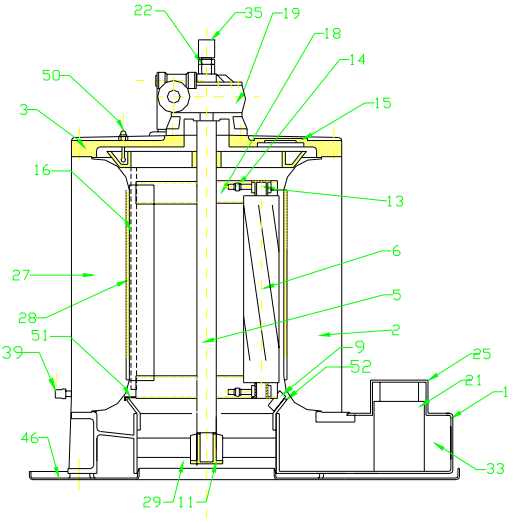
e) LIQUID RETURN TO THE COMPRESSOR:

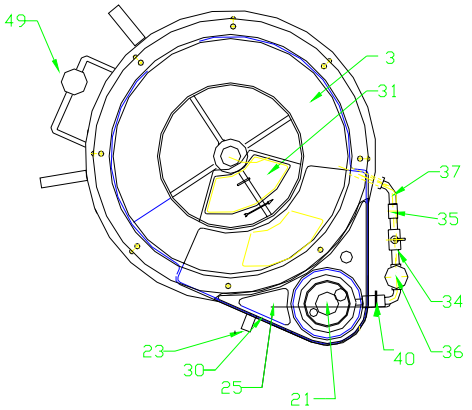
The evaporator is being overfed, it is necessary to adjust the regulation tap (FTL) or the thermostatic valve.

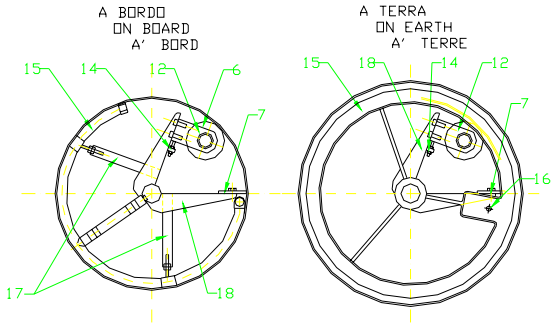
This could also occur when the machine has not been shut-down according to the correct procedure.

XI. EXPLODED VIEWS and PARTS LIST



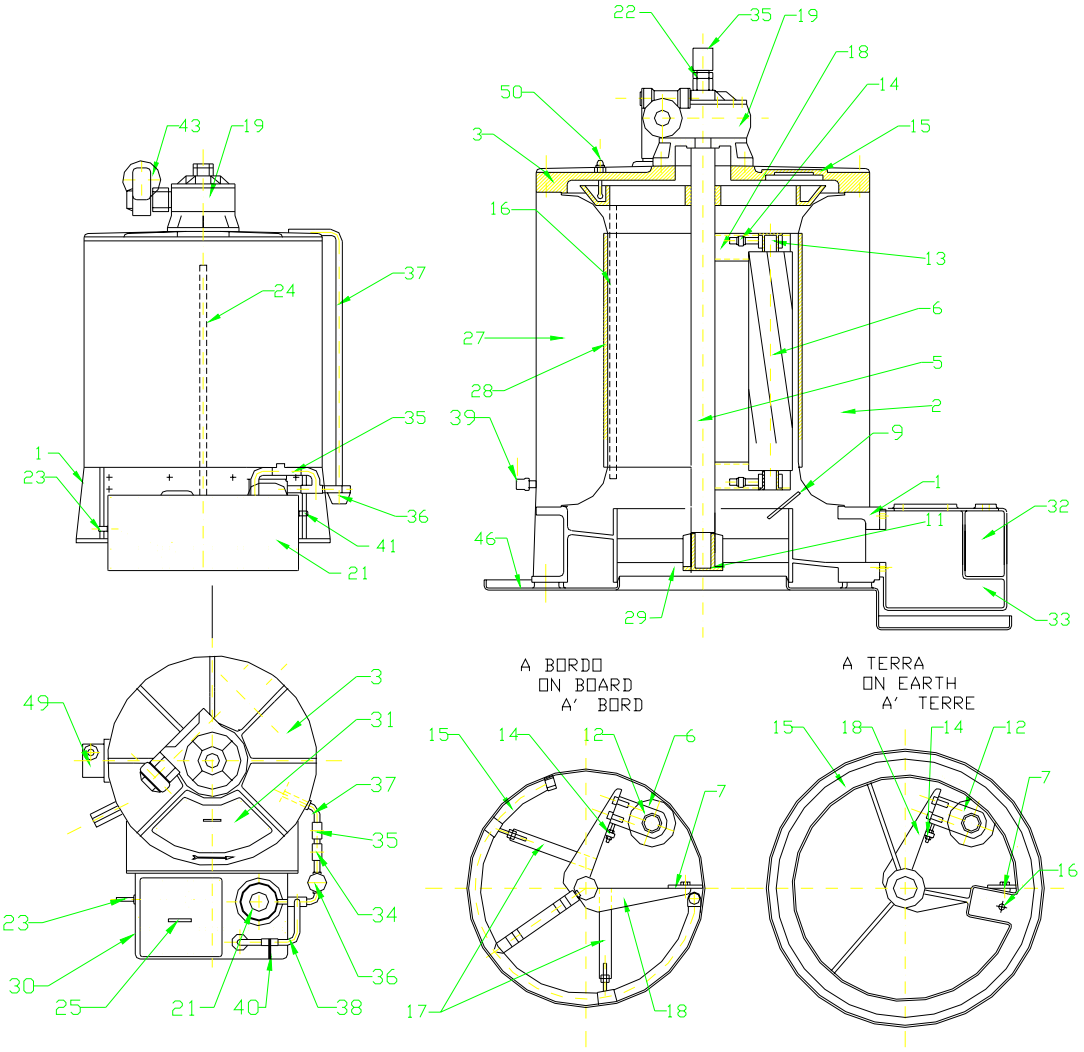






EVE201 – 301 - 401– 651 – 801 - 1001 – 1301 – 1501

Pos.	component	q.ity	Pos.	component	q.ity
1	Base	1	27	Insulation	-
2	Evaporator cylinder:	1	28	Internal screw base	-
3	Upper cover	1	29	Ice outlet hole	-
5	Rotating Shaft	1	30	Water drawer	1
6	Scraping roller – ice-breaker	1	31	Upper cover inspection hatch	1
7	scraping blade	1	32	Water and salt reservoir	-
9	Deflector kit + drip tray	1	33	Water accumulation reservoir	-
11	Small-end bushing rotating Shaft	1	34	Water regulation tap	1
12	Scraping roller support	2	35	Water input rotating coupling	1
13	Scraping roller bushing	2	36	Water filter	1
14	Scraping roller register screws	2	37	Delivery piping to the distributor	-
15	Raceway/water distribution ring	1	38	Delivery piping to the salt drawer	-
16	Vertical water distributor	1	39	Oil release tap	1/2
17	Water distributor ring support board versions	-	40	Salinity regulation tap	-
18	Scraping roller / scraping blade door brackets	-	41	Overflow piping attachment	-
19	Gear reducer	-	43	Electrical motor	1
21	Water pump	1	46	Drip pan	1
22	Rotating shaft nut and lock nut tightening	1+1	49	thermostatic valve or electrical level regulator FTL	1
23	Solenoid valve	1	50	Water level probe	1
24	Salt door tube	1	51	Shaft Drip tray	1
25	Water accumulation reservoir hatch	1	52	Brush deflector	1



EVE2401

Pos.	component	q.ity	Pos.	component	q.ity
1	Base	1	27	Insulation	-
2	Evaporator cylinder:	1	28	Internal screw base	-
3	Upper cover	1	29	Ice outlet hole	-
5	Rotating Shaft	1	30	Water drawer	1
6	Scraping roller – ice-breaker	1	31	Upper cover inspection hatch	1
7	scraping blade	1	32	Water and salt reservoir	-
9	Deflector kit + drip tray	1	33	Water accumulation reservoir	-
11	Small-end bushing rotating Shaft	1	34	Water regulation tap	1
12	Scraping roller support	2	35	Water input rotating coupling	1
13	Scraping roller bushing	2	36	Water filter	1
14	Scraping roller register screws	2	37	Delivery piping to the distributor	-
15	Raceway/water distribution ring	1	38	Delivery piping to the salt drawer	-
16	Vertical water distributor	1	39	Oil release tap	1/2
17	Water distributor ring support board versions	-	40	Salinity regulation tap	-
18	Scraping roller / scraping blade door brackets	-	41	Overflow piping attachment	-
19	Gear reducer	-	43	Electrical motor	1
21	Water pump	1	46	Drip pan	1
22	Rotating shaft nut and lock nut tightening	1+1	49	thermostatic valve or electrical level regulator FTL	1
23	Solenoid valve	1	50	Water level probe	1
24	Salt door tube	1			
25	Water accumulation reservoir hatch	1			

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